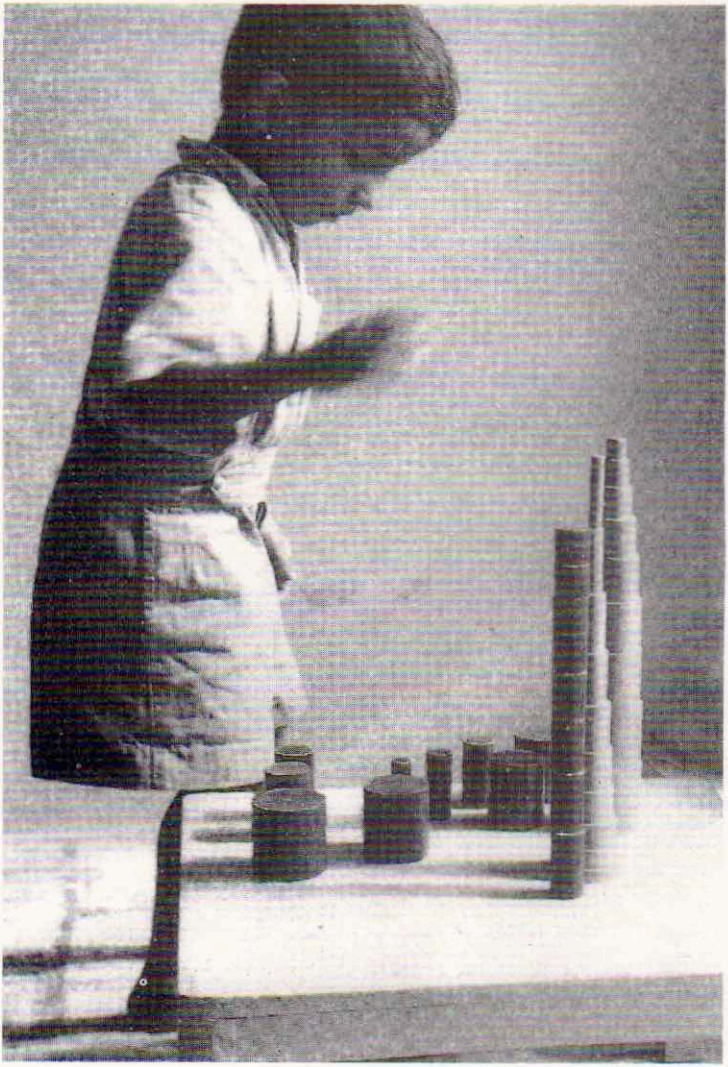
CREATIVE DEVELOPMENT IN THE CHILD



THE MONTESSORI APPROACH

VOLUME ONE

KALAKSHETRA PRESS

Montessori Education deals both with the fundamental principles and special aspects of her work. This covers a field much vaster than that of child education and is no longer a matter of concern for teachers and parents only, but raises a question concerning mankind as a whole.

Montessori education is based on a series genuine discoveries. When Dr. Montessori started her work in the field of education and child psychology, she was already famous as the first woman to obtain a doctor's degree in medicine and surgery in her country. Her scientific training and experience were, therefore, exceptionally broad-based and remain, even today, quite unique among educationists. Her approach to education encompasses the whole development of man from birth to adulthood. Its application among all social classes, cultures and creeds on all the five continents, most of which Dr. Montessori visited herself, provided her with a uniquely vast field of experimentation and with confirmation of the validity of her discoveries. The Director-General of the UNESCO could therefore, declare

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CREATIVE DEVELOPMENT IN THE CHILD

THE MONTESSORI APPROACH

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VOLUME I

Edited by
RUKMINI RAMACHANDRAN

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" The child's work is to fashion a man in the fullness of his strength. By the time the adult exists, the child has vanished. So the whole life of the child is an advance towards perfection, towards a greater completeness.....No one can do for the child, the work that he has to do, to build the man he is making. The child enjoys doing the work needed to complete himself. His life is one in which work—the doing of one's duty, begets joy and happiness."

Maria Montessori

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EDITOR'S NOTE

Perhaps the greatest challenges faced by an editor are those offered by translations and historical documents. In these cases it is essential for the editor to walk the fine line between staying as true to the original as possible, and bringing the material to a modern reader without sacrificing clarity.

Dr. Maria Montessori lectured in Italian. According to students who were actually present at her classes during the 1939 course at Madras, these lectures were loosely translated into English by Mario Montessori Sr., as she spoke. To help the students who were of mixed linguistic backgrounds from all over India, the lectures were taken down near verbatim in short hand, transcribed and set into galleys overnight. The galley-proofs were then handed out to the students the following day. One such set of proofs forms the original manuscript for this book. Therefore it was not a manuscript written with any sequential deliberation. Besides being a historically relevant translation it presents the additional challenge of being in an informal spoken mode.

For the most part, each chapter in this book encompasses a single lecture. Except for rearranging some material to ensure continuity and attempting to standardise the terminology throughout, I have left the lectures in the same order as the original, swinging between psychology and the

use of the materials. This seemed necessary to bring out the natural direction taken by the course, and to demonstrate the overlapping of the two areas.

Today some of the names used for the various materials are different. Some of the presentations have further evolved since Dr. Montessori's time. In such cases I have included footnotes. Wherever it seemed necessary I have provided detailed descriptions of the materials used today. I have also inserted cross references and dates wherever possible to help place the book in historical perspective.

Working on this book has been a great learning experience. I would like to thank Mr. C. Nachiappan of Kalakshetra Publications for not only entrusting this work to me, but for introducing me to the inspiring world of Montessori education. I would also like to thank Ms. Zarin Malva, Director of Training of the Montessori Training Course, Bombay and Ms. Jer Garda for their guidance and support, Ms. Lakshmi Unnikrishnan for her help with editing, Mr. N. Narayanan for his work at the computer, Ms. Cheryl Ferreira for all her suggestions and advice, and Mr. Abhinav Ramnarayan for his help with proof reading. I would like to thank all the employees of Kalakshetra Publications for their co-operation. I would specially like to thank my parents for their interest in my work and their unfailing support.

MADRAS
September 01, 1995. RUKMINI RAMACHANDRAN

Ms. Rukmini Ramachandran has done commendable work in editing Dr. Montessori's earliest lectures in India. With an M. A. in English Literature, Ms. Ramachandran worked as an Assistant Editor with *Gokulam* a children's monthly magazine. She was sponsored by Kalakshetra Publications to take the AMI training course in Bombay and now runs Supraja Montessori School in Madras.

INTRODUCTION

Even before the first International Montessori Course in India in 1939. Dr. Maria Montessori was well known to the Indian public as a great educationist. In fact the Montessori movement in India has a history almost as old as the movement itself.

Right from the first International Course run by Dr. Montessori in Rome in 1913, there were Indians among her students. As the movement grew, a few people who took this training, came to India and applied what they had learned.

Thus it came about that Dr. Annie Besant, President of the Theosophical Society in the twenties, sponsored a Montessori section in the Guindy School run under the directorship of Mr. G. V. Subba Rao with the help of one or two people trained under Dr. Montessori in London. Even a workshop to prepare Montessori material according to specifications was created. So even before her arrival in India, the Montessori method had had some influence on educational theory and practice in Madras.

Many eminent Indians, especially many leaders of the National movement working towards a democratic republic, were keenly interested in the Montessori approach to education. The most significant of these was Mahatma Gandhi. When Gandhiji represented India at the Round Table Conference in London in the year 1932, Dr. Montessori was holding one of her courses there. They met at the home of

mutual friends and never after lost touch. On his way back to India, Gandhiji visited Montessori schools in Rome, and always showed interest in Montessori principles.

Dr. George Sidney Arundale, who was then the President of the Theosophical Society and his wife Rukmini Devi the founder of Kalakshetra, were in fact responsible for inviting the Montessoris to India. Having heard of the great work of Dr. Montessori from Dr. Besant, the Arundales invited her to India to conduct a training course for teachers. Dr. Montessori arrived in Adyar in 1939, accompanied by her adopted son Mario Sr.. Dr. Montessori came to Madras via Bombay. She flew in on the Tata mail plane, the early historic service to Madras. The journey in the little plane took six hours as there were many stops. All the children from Besant Memorial School and other prominent leaders of Madras received her at the airport. At the Headquarters Hall of Theosophical Society a special reception was organised to welcome them. The students of Besant Memorial School formed a guard of honour.

The course was held in the compound of the Theosophical Society, Adyar. As there was no building large enough to accommodate all the students, palm leaf huts were built; the largest of these served as the lecture hall. A dais of flagstones was built for Dr. Montessori's table. The inauguration of the course was attended by the leading personalities of Madras, C. Rajagopalachari and S. Satyamurti among them.

Students came from all over India and even as far as Sri Lanka to attend this course, which involved three months of intensive work. The students lived in the compound of the Theosophical Society. As it was thus a residential course, lecture times were rarely fixed, lectures being held at all hours of the day from early morning till late evening. The students lived close to the Montessoris and learned from them with reverence.

Dr. Montessori lectured in Italian. These lectures were

translated into English by Mario Sr., who by all accounts was a jolly person; Dr. Montessori's companion, friend and helper, who always kept her in good spirits. Dr. Montessori lectured in low tones. When she spoke the students maintained attentive silence. The translation done after every few lines gave the students a few moments to assimilate what was said. Dr. Montessori paid very close attention to the translation. If Mario Sr., fumbled for words she would often supply a suitable English expression. After each lecture the students took leave of Dr. Montessori with devotion, reverently touching her hands, or even touching her feet.

World War II broke out in 1939. In 1940 the Montessoris were interned in Kodaikanal as enemy aliens. Dr. Montessori was then seventy years old. This extremely unfortunate occurrence turned out well for India, where the Montessori movement grew from strength to strength. The Montessoris were restricted to a five mile radius of their residence "Rose Bank". As they were actively involved with their work throughout this period they continued to train teachers. India's diversity of language, social custom and religious practice enriched their research. During the time they worked with children in Madras, Dr. Montessori put into practice her theories of adapting the environment, furniture and the Practical Life materials to local conditions. Their Indian sojourn eventually enabled them to extend the Montessori approach for children from birth to three years of age and also between six and twelve years of age.

In 1945, the Besant Centenary year, an All India Montessori Congress was held and the Indian wing of Association Montessori Internationale was set up, manned by some of the most eminent Indians of the time. The influence of Dr. Montessori's work was also seen in endeavours and movements not directly related to the method but indirectly influenced by her ideas. The Montessori method was supported by Indian stalwarts — Rabindranath Tagore, Jawahar-

lal Nehru, Vijayalakshmi Pandit, S. Radhakrishnan and Zakhir Hussain (the latter two Presidents of India), to name just a few. Her work also received acclaim and won many supporters in Tamil Nadu. Kalki Krishnamurthy a well known journalist and a social reformer, wrote about her great work in Kalki, a Tamil weekly which he had started. Several industrial houses also supported her work. Ms. Sarla Devi Sarabhai was even the Vice President of the Indian wing of AMI for a time. The Montessoris received many invitations as more and more people took an interest in their work.

Thus Dr. Montessori travelled extensively in India from 1939 to 1949, returning to Europe only once in these ten years. Training courses were held in Madras, Kodaikanal, Ahmedabad, Srinagar, and Poona. Schools opened all over India not only in the towns but also in rural areas.

In 1946, *Education for a New World* edited by Ms. Helen Wheel (the Principal of Lady Sivaswamy Iyer Girls School, a Theosophist who took the training under Dr. Montessori at Madras) was published at Kalakshetra Publications. This book which Dr. Montessori dedicated to George Sidney Arundale, was the second Montessori book to be published in India[1], and the first book to be published by the newly created Kalakshetra Publications. Thus began the historical relationship between Kalakshetra Publications and the Montessoris. Kalakshetra Publications is run by Mr. C. Nachiappan who is greatly interested in the propagation of the Montessori method. Sharing the concern of Mario Sr., and Ada Montessori about the availability of Montessori books, Mr. Nachiappan took upon himself the task of keeping them always alive in print. The works of Maria Montessori which have emerged from Kalakshetra Publications over the last fifty years are familiar to most Montessorians.

1. The first Montessori book to be published in India was *The Secret of Childhood*, a Longman Green publication.

The Montessori books form the spine of the Montessori movement. *To Educate the Human Potential* was published in 1948 as a companion volume to the first book and an earlier work (*The Montessori Method*) was reprinted as *The Discovery of the Child.* The most significant work published in India was *The Absorbent Mind*, which is based on her lectures during the course in Ahmedabad in 1948. Since then Kalakshetra Publications has brought out Montessori books regularly. Since the first book published in 1946, twelve new titles have been added.

In 1946, the Montessoris returned to Europe. A course was held in London and they also visited Scotland. They returned to Madras in 1947 to start a Montessori University in the city. This dream however remained unfulfilled due to the partition of India and Pakistan. Dr. Montessori visited Sri Lanka and held a course in Colombo. She also visited Karachi and participated in the first Montessori Course in Pakistan.

Dr. Montessori left India in 1949. She left behind her devoted students to carry on the work she had begun. Mr. A. M. Joosten, and after his time Mr. S. R. Swamy continued to hold AMI training courses for teachers, extending the duration of each course to one year, as the course was no longer residential. Today there are two AMI Montessori Courses in India in Bangalore and Bombay and a third one is being planned in Madras.

Many students of the early years distinguished themselves later, and made a significant contribution to the cause of education in India. Among the students of the 1939 course at Madras are Ms. Taraporewalla from Hyderabad whose House of Children applies the method even today, Ms. Gool Minwalla who has been a staunch supporter of the Montessori method in Pakistan and is the Director of Training of the Pakistan Montessori Course and the late Ms. Tehmina Wadia who founded the Besant Montessori School in Bombay. Other Montessorians, trained in the early years who served

the cause of children are Mr. C. Vaitheeswaran, Mr. M. Krishnan and Ms. Charles from Tamil Nadu.

The Montessoris' unexpectedly long stay in India is best summed up by Mario Sr., in his article *The Impact of India*:

" Looking back on the chequered life of Dr. Montessori .....there is a period that looms above the others for its dramatic nature and for the completion she attained in her vast vision ..... India could be compared to a united Europe for the diversity of peoples, language and mentality that compose the vast country ..... So we had the privilege of coming in prolonged contact with children in all situations ..... The children were our universal ambassadors to all ..... And in my heart the light of India steadily warms the sense of gratitude for the country which showed so great a regard for Dr. Montessori, surrounded her with friendship, and gave her the support and collaboration of selflessly devoted students."

The educational principles of Dr. Montessori have permeated the very fabric of education in many schools in India. The Indian public continues to support institutions which believe in alternative education, learning centres which are sensitive to the needs of the child, offering the child a unique environment in which he finds the necessary assistance to develop himself.

CHAPTER I

The whole of humanity is one — one race, one class, one society. Humanity is divided into many groups, which differ from one another so greatly, that it is impossible to realise any concordance between them. How interesting and mysterious this humanity is!

Man inhabits the whole surface of the world. Despite varying climatic conditions, men live everywhere — at either pole, in the desert. These men are so different from one another, as they adapt themselves to their conditions of life. There is evolution in every form of civilisation. When men become accustomed to certain conditions they do not remain the same. Through adaptation, different spiritual groups come about. Man alone is able to do this. From a scientific point of view, it might be said that such is not the case among animals, which bear the special characteristics of their species.

Men in Italy, France or England five hundred years ago, lived under conditions vastly different from those today. If an ancestor of mine who lived six centuries ago happened to live today, he would not be able to live under present conditions. He would say — "Oh! The world is full of terrible contrasts. I cannot live in this land where there is so much movement." He would find it equally impossible to live, under conditions prevalent in Italy ten centuries ago. Yet Italians ten centuries ago, found their life very easy! How is it that people live a fine life in their own environ-

ments, no matter what the conditions? It is very difficult for the adult being to adapt himself to conditions different from those to which he has been accustomed. It is the child who has the power to create the human personality suited to his living conditions, and the positive power to adjust himself to the environment into which he is born. The child is born with this special power to create, not only the man who finds life easy in the conditions of his environment, but also to incarnate the spiritual ideas of the group to which he belongs. Why is it so? It is because the child has the power to create the adults of that group. This is why a man who resides away from the child cannot hope to attain manhood, or even live peacefully. You will laugh, and tell me it is God who creates the human beings and the nature they possess. Certainly it is true that God makes use of man in order to reach his aim, that man may be peaceful and contented, in whatever environment he happens to be. This begins with the child.

It is in the child whether or not, the adult prepares to adapt himself to the environment in which he finds himself. We must therefore, change our present misconceptions, and perceive the nature of the relation that exists between an adult and a child. If the child could not adapt to his environment, humanity would not be able to change and live peacefully and contentedly under differing conditions. The man who allows the child in him to grow up, finds himself content in his environment and fulfils the accomplishments of humanity.

There are two functions which exist in humanity — the function belonging to the adult, and the function belonging to the child. The child plays a very great role in shaping humanity, on which everything depends. The child is different from the adult. He does not want the things that we adults are accustomed to. The child possesses the power, to construct the true characteristics of adult man, a power

an adult no longer possesses. If the child does not build the natural characteristics of an adult, the adult person is incapable of doing the task himself.

Let us consider for instance the language of man. On one side, there is an adult who has to learn or acquire a new language, and on the other, is a new-born child who must also acquire a new language. At least the adult person possesses certain advantages over the new-born child; he knows how to talk, and already possesses a language. The child acquires the language in his environment simply by living, or at least it appears so. He is entirely alone and yet he must speak.

As soon as the child is born, his attention is drawn to the words that he hears spoken around him. The sounds he hears are entirely new. The sounds represent ideas, and the small child associates the sounds with the ideas they represent. The child is capable of acquiring the sounds he hears with such perfection, that later they can be said to be a special group. No adult can reproduce to perfection, a foreign language. Any language which we call our language, is the language of the child, who has been able to build it up. Certain details of an alien language are thoroughly difficult to learn unless you hear it spoken by a practiced speaker. Yet the child learns and speaks a new language after three years. How many grammar books, how many professors would you need to accomplish the same thing! The child learns by himself; no one teaches him. He creates something which belongs to him. It is the child who is capable of fixing the characteristics of the people, and the characteristics of the language. By studying the child carefully, we see that he possesses special powers with which he develops the characteristics of the adult he becomes.

At different ages the child possesses different and special sensitivities, each of which allows him to fix up one adult

characteristic[1]. It is a power which lasts only so long as it is necessary for the child to acquire the special characteristic. Once it has been acquired, the power is lost. Then he acquires another power for acquiring another characteristic and so on.

The story of the child is marvellous indeed. Can the adult do what the child can do? When you feel great pain in your teeth and you can no longer stand it, you go to a dentist, who leaves you without teeth forever. Look at the child! He has a set of teeth, he loses his teeth one by one, and still gets a new set of teeth again. The child has the power of replacing all his teeth. It is only during childhood that he has this power. I mention this just to draw attention to the task of the child as a constructive builder of the adult brain. The adult then enjoys the patrimony which he has inherited from the child.

The child is impelled by the opportunities given to him. He is full of the possibilities of construction. He is the builder of man. Hence the oft-quoted phrase — "The child is the Father of man[2]." It is not right to say that the child is plastic because of his capacity to acquire characteristics. Could he put forth a new set of teeth if he were plastic? The child's life is one long struggle, but when he is constructive, he is happy. The child and his environment are in constant relation. The child feels the environment creating law, a law so powerful that it contributes to the transformation of his own personality. While he undergoes transformation, he creates.

The child in his primitive period hears the sounds of words which we pronounce all around him. How many

1. More material on the sensitive periods in the child's first six years can be found in the book by Maria Montessori *The Secret of Childhood*, 1936.

2. From a poem by English poet William Wordsworth (1850-1970) published in *Lyrical Ballads*, 1798.

kinds of noises there are around a child who lives near a railway station, or in a city like London. Yet among all these sounds, the child distinguishes the special sounds of spoken words and the modifications of sounds which make different words. The sounds of whistles, and the rattling of wheels are louder, yet the child has a special sensitivity for those special sounds which make the spoken word.

If you had a torch, you would see in the darkness, only that portion lit by the rays of torch. Something similar happens in the brain. The rays of thought are directed towards the delicate sounds that may be found in the spoken word. These sounds produce vibrations which are so perfect that the child reproduces them to perfection. How many difficult movements are necessary to reproduce these sounds; certain contortions of special muscles of the cheek and throat, seem to combine together to reproduce these very, very delicate sounds. These vibrations begin to make sense to the child. Why does the child who lives near the railway station, who does not pay attention to the sounds of locomotives, pay close attention to spoken words? He must have the power to choose the internal sound from the external. Therein lies the great creative power of the child.

CHAPTER 2

The human child, the most active creature upon this earth, is a mystery to us. We know that he will be able to talk; he will possess two creative hands. Yet, a part of his life is unknown to us, and we are unable to predict exactly what he will do.

We know of animals, what their life will be. We know their songs will always be the same; how quickly the young ones will begin to resemble the adult animals. The child of man however remains inert, incapable of movement and without adult powers for a long time. The languages he will speak, which may be very simple or very complicated, will not be determined by his personality, but by his environment.

Not being limited to any one kind of movement, the child will be capable of the most complicated movements. He will be able to walk, jump, climb and swim. His hands will be capable of doing things which are most intricate, representing long experience from past centuries. It is certain that the child will be able to talk, and will learn to do with his hands, things that took the previous generations, centuries and centuries of work to acquire and perfect. Even if this evolution is infinite in its line, if it is infinite in time, at no matter what point the child is born, he will be capable of taking up from the point at which humanity has arrived at the time.

We can say therefore, that what the child has got is not

static. This may be the case with animals perhaps, it is not the case with the child. It is evident that the child must possess in himself, that which allows him to make his own effort to achieve the standard of the civilisation of the time in which he is born. There is no doubt that the child must possess special aptitudes that allow him to do so.

If the child were an empty vessel all that he does cannot be explained. It is certain that the child has the aptitude to speak. Nature has given to human beings, the capacity that gives him the potential to construct the human language.

The same can be said for all movement. There is no doubt that the great gift that nature has given to human beings is the possession of two hands, special organs characteristic of humans, which are in such a close relation with the intelligence. To do something with only the hands without using the intelligence, is being unable to do anything. In order to accomplish any work, it is necessary to make hands do the work. It is not working hands which are the gifts of nature, but also all the capacities of the hands, which must be the personal conquest of man.

Man can swim. Yet swimming is not natural to him, as it is to fish. He must acquire the capacity to do so. Man can swing about on a piece of rope,but he cannot accomplish this feat with the same facility that nature has bestowed upon monkeys. The accomplishment must be acquired by effort.

Man has received great gifts from nature, but if he made no effort all these gifts would be of no use to him. Activity is continuous. It never stops, and does not end. You may, for example, be a person who is known all over the world for an accomplishment. Yet, you will lose this perfect capacity, without continued exercise. You may be an eminent pianist, you may be able to play on instruments with perfection, yet when you arrive at perfection, you must

exercise yourself in order not to lose it. It is necessary therefore to have activity, not only in order to develop the ability, but also to keep it. There is no place in the world for a man who rests.

Man is energy in action, his activity is continuous. This being so, why does the child remain inert for such a long period? The new-born child does nothing special, not because he is incapable of doing anything, but because he has no set track. It is in him to become anything, but at first this latent potentiality is hidden.

All the movements of man are connected with the will, by which we direct movement. This will is closely connected with the intelligence. At the centre of man's great work is his intelligence. Therefore, intelligence comes before movement. So a new-born child is an intelligent being, inert only in movement.

The child, before he has begun making all that he is capable of making, already possesses a keen intelligence, and a personality of his own. Every mother will tell you how intelligent her child is even when the child does not know how to talk or move — "He is so intelligent. He knows everything around him." After sometime, the same mother will say — "Don't you see how stupid my child is? How naughty? How bad?" It is because she does not know how to make him obey her, or do what she wants him to do. It is strange how mothers change their own way of judging their children. Something hidden takes place. When the child begins to move, he follows the inner direction given to him; not by instinct, but by another faculty.

Let us take a word which the child already recognises. What is a word? It is a series of sounds which has meaning. If the child is capable of taking in a word and its meaning, there must be a clear idea in his mind. When you speak of milk or bread, the child understands what you mean.

Although he does not speak, the young child sees many things around him, many more than we think. In this first year he explores his environment consciously and recognises everything without being taught, because nobody can teach him anything. He recognises different things, and is able to understand everything. He has in fact, made a study of where anything is, anywhere in the room. His intelligence has even arrived at the point of distinguishing objects from images—representations of objects in pictures. If taken on a long walk or drive, he will have a chance to develop his intelligence through his senses. This help is best offered in his first year.

When the child is two years old, the things that interest him are so very tiny, that one almost needs a magnifying glass to look at them. He may look at pictures or insects that are too tiny for us to observe. The pictures and objects which are very obvious no longer interest him.

We think, that the child needs us to teach him what he needs to know. There are teachers who make great effort to get the child to understand the difference between warmth and coldness. The child who has felt the warmth and the cold many times, may be indifferent to the explanation, while we think that he has failed to understand. The teacher continues to explain, thinking all the time how stupid the child is. There comes a separation between the soul of the teacher and the soul of the child, a misunderstanding which becomes stronger and stronger, just as it does between a mother and her child.

The child's first work is the work of intelligence. It is upon this basis, that the child acquires all his movements. The movement of the hands will be in relation to his will. Do you think that the child moves his hands aimlessly? He moves his hands to grasp something, to make use of them intelligently. If hands were not organs controlled by in-

telligence, man would probably be walking on four feet instead of two. The child's first movement is not that of the feet, it is the movement of the hands. This is the first step in education.

Many times when a very small child tries to grasp something, his mother does not allow him to do so, but simply kisses his hand, and takes it away. The child is made to look stupid and pathetic. A child who cannot walk alone is washed, made to sleep as long as possible, and taken out for walks in a perambulator. In our modern houses, he is put in a room, where he can only see what is in the room. The child cannot carry out his experience, because he is controlled. He cannot obey his inner command. The child is man, who must do everything using his own movements. Thus until he learns to stand alone on his own feet his struggle will continue.

CHAPTER 3

We must become a little better acquainted with the child who is somewhat mysterious, somewhat hidden. The child constantly follows an inner guide. When he starts to move, and when he achieves perfect movement, he obeys certain inner laws of development.

The child has a great many muscles, and every one of them must become active and co-ordinated. They must act in accordance with one another, and there must be order in their action.

The co-ordination of movement is a very complex phenomenon, one which is governed by nature itself. To achieve co-ordination, exercise and activity are necessary. Generally, an aim to be achieved is necessary. In order to arrive at the accomplishment of an aim, a will to direct the actions of the individual is also necessary. When the adult thinks about the movement of the child, he always thinks of disorderly movement. He is unable to conceive of co-ordinated movement in the child. He believes that if it were not for him, the child could not move with co-ordination. He wishes to direct the activities and actions of the child with his own will.

The child has natural directives, natural impulses which lead him to achieve co-ordination of movement. The most evident proof of this is the child's imitation of the movements which he sees accomplished around him. If these

movements are co-ordinated movements, then the child has a guide in order to achieve co-ordination. So a small child observing the movements of the adults in the house, tries to do the same kind of action.

A three and a half year old child, received music lessons from a teacher who made the child walk round and round a big round table. A child who was not yet two years old, living in the same house, showed a desire to carry out the same action. The teacher in the dignity of her profession said — "I cannot take charge of a child only two years old." The family could not see what harm it would do if this child merely walked behind the other child. The teacher had to give in. When she came the next time, she threw her hat and coat on the sofa, and with resignation said — "Let us see what we can do with a child of two years." When the small child was told that she could walk round the table in time to the music behind her sister, she angrily refused. The child was asked why she did not want to walk around the table with her sister anymore. The child explained that she was angry to see the teacher's coat and hat on the sofa, as it was not the place for them. She wanted to put them where they were usually kept. When this was done, the child was very happy to walk behind her sister.

The child until the age of two is very sensitive to any appearance of disorder in his environment. He has understood where things are placed. He knows that they have a precise location, and imitates this order. He needs things to be in the same place before proceeding to any other activity. At three and a half years, the child no longer cares about disorder. It does not matter to him if things are out of place. So co-ordinated movements are preceded by a period in which order is established.

It is apparent that the child tries to imitate what he sees accomplished around himself. This imitation is not

never be able to have his own experience, and accomplish the co-ordination which he has to accomplish. So when a mother washes, dresses and combs a child, she has a child who is well-dressed, and well-combed, but a child who has no experience and unable to carry out actions, and therefore, unable to develop that which is noble and higher in himself. If a child is hungry and we say— "Oh poor child, how much he has to work with those jaws. I will eat for him," the child might rest, but he will be undernourished. If the adult carries out all actions for him, he will be unable to develop. Over the years, we have observed this among children everywhere.

Therefore, the first and most important principle underlying our method is that every useless help given to the child becomes an obstacle to his development. This is not merely philosophy, but a fact to which we attach fundamental importance.

Generally, people are ready to render assistance, when we do not need it. Especially in western society, everyone is always ready to pour out coffee for us or hold our seats down. If we allowed it, we would be helped to such an extent, we would not be able to feed ourselves, someone would put things in our mouth! But how difficult it is to find anyone to assist us, when we really need assistance! It is very clear that it is only through personal activity that the child can develop himself. Yet the child is unable to do everything for himself, and we as adults cannot abandon him.

This brings us to a real study of the manner in which the child can and must be helped, and the limits of such help. We can not say that all help is an obstacle to the development of the child. We only say that useless help is an impediment to his progress. The child, in the very wise and simple way of children says — "*Help me to do things by myself.*" This is his valuable lesson to us. How well-expressed his need!

This fundamental principle, already represents a guide

mechanical, like that of a monkey who sees movement and tries to repeat it. We might say instead, that it is a study of how to accomplish these movements. What do adults do in order to wash a dish? The child watches but not mechanically, without any outside aid, such as the monkey would do. On seeing dishes being washed, a monkey would make the same movements without any dish in his hands. The child will not only repeat the movements, but will carry out the movements of washing dishes. He may not carry out the action immediately on seeing it performed, but will perhaps take it in and repeat it later. He learns how to move and having acquired the facility will carry out a definite movements.

It is the same with words. A parrot on hearing certain sounds, will squeak more or less in imitation, trying to produce them. A child however, understands the meaning of the words which he learns. He does not mechanically repeat the sounds. The child learns to say — " I want to eat." Yet he will use the words only when he is hungry. Therefore, it is not mere imitation. It is study which the child carries out, through experience.

It is the repetition of these experiences which lead gradually to the co-ordination of movement. That is why the small child needs around him a simple environment, where the adults around him carry out simple, natural actions that he can observe, study and later carry out.

Although this sounds simple enough, in most environments the child faces many difficulties in trying to carry out actions by himself. First of all the children are placed to the side, and they do not see anything. Mothers when they perform actions, do them quickly, and in a very complicated way. Often if the child would like to do something, he is not allowed to do it. Sometimes he is not even allowed to touch anything. The adult carries out for the child all

the actions, which the child should carry out for himself, and does not even permit the child to see the actions carried out. These conditions do not permit a child to have his own experience, and carry out his own studies. We must put the child in an environment where he can carry out actions. Then we can observe how he develops co-ordination of movement naturally.

A fact demonstrated to us by the child, caused us great surprise. No child likes to be helped. Yet we all feel that the child must be helped. Adults feel that the best thing that can be done for the child is to do everything for him. In our country, we say how lucky the child is to have so many people around to help him, and do things for him. We praise a mother when she does everything for the child. A good mother washes the child, clothes him, takes him for a walk, puts him to bed, and takes him out of bed. We have all noticed that children are ungrateful! Instead of showing their gratitude they fight back and say — "No, no! I do not want to be washed! I do not want to go to bed!" Then we say how bad the child is, and that in childhood there is a spirit of contradiction or opposition. We also say that children, are uncivilised by nature, because they do not want to be washed and combed.

If we observe the child, we will see that he is not against washing and combing. He is against the fact that someone humbles him, as if he were an object, and does these things for him. When someone tries to do things for him, the child rebels. This is not only a wish to be active, but also what we might call a deep sentiment of independence, of freedom, which is inborn in childhood; not to be touched by adults, to have the satisfying feeling of being able to carry out an action for himself.

Once we have understood this, we realise how natural it is. It is certain that if we do things for the child, he will

for adults to follow, but it is not so simple to help the child to do things for himself. It is easier for us in fact, to do things for the child. For instance, if we want to help the child to wash and comb himself, a number of problems arise. First, if he is to perform these actions, he must have the objects with which to carry them out. To comb himself, the child must have a comb which is suitable in form to the size of his hand. If he needs to carry out exercises such as polishing brass, or washing a window, then the objects with which he has to carry out these actions must be suitably small. To teach the child how these actions are carried out takes much more time and patience on our part than it would take to do the actions ourselves.

So when we say that every useless help is an obstacle to the child we do not mean that the child is to be abandoned without any help. On the contrary, as educators, we must carefully prepare for the child an environment which contains materials suitable to his strength and intellectual needs. As educators, we must understand and know the limits of our intervention, if we are to be of real help in the child's development. We must know when our activity must cease. As educators we must find orientation for our actions, in the needs of the child, and be happy to help the child, only within those limits necessary for the child. Only then does that beautiful and necessary sentiment of humility begin to arise in our souls so that we can ask ourselves how to help, rather than become obstacles to the development of a soul.

CHAPTER 4

Modern studies have proved the importance of the life of the young, not only among humans, but in general. It is necessary for us to probe deeper and deeper into this truth. Before now, studies carried out usually concerned adults, upon the result of which theories arose. In modern times, the study of biology, the study of life, even the study of evolution, is focussed on the young ones. The biologists of today for example, would not even dream of taking the adult into consideration, if they had to make a transformation. In nature, a great part of the possibility of the continuation of life, is given to the care of the young. This is the new path open to science, the modern way of study.

The discovery of sensitive periods in the life of a human child, one of the most illuminating chapters of modern biology, is one of the bases of the modern theories of evolution. The young in the course of development have special sensitivities, special impulses which impel them to carry out certain actions which help them in their life. When the aim or purpose of this sensitivity is served, it disappears and another one takes its place. So passing from one sensitivity to another, and guided by these sensitivities, the young being arrives at the adult stage. So the survival of the species is not left merely to the help that the adult can give, but especially to the sensitivities given to the young children of the species.

The life of the insect has become today the classic ex-

ample to illustrate these sensitive periods.[1] The mother insect before dying deposits her eggs at the meeting of two branches. Here the eggs are very sheltered. In the darkness of this remote spot, the larva, the little grubs, come forth from the eggs. The grub is very delicate. It is born in a place where everything is dark and very hard. The food suitable to the grub is only to be found at the extremes of the branches where the most tender leaves and buds are. Who will tend this poor little being? Who will tell it to go forth to the point of the branches where it will find the food? These creatures are furnished with a special sensitivity — they are attracted by light, the more brilliant the light, the greater the attraction. So the little grubs respond to this call of the light and move until they come to the brightest spot, at the end of the branches. There they find the food suited to their needs. By and by, when they become bigger and this choice food is no longer required, they lose this sensitivity to light. In the experiments carried out, the young ones responded to light, going towards it when placed in a perforated box, but the older ones were completely indifferent. They were not blind, but indifferent. The attraction for light had disappeared.

During these sensitive periods, we see an ardent love, a violent attraction to something, in the young one. There is no indifference. It is only adults who become indifferent. How often have people remarked on the enthusiasm that characterises the actions of children! This enthusiasm, this vivacity, this love, that nature has put in the soul of the child, is necessary for his life. These violent attractions change with the age of the child. Adults notice the temporary character of these attractions, and say that children are fickle.

The sensitive periods help the child acquire a characteristic function of the species, and when this function

1. Dutch botanist, Hugo de Vries

has been acquired, then indifference comes, and the sensitive period for that special thing passes. Although adults have greater intelligence and more patience than the child, he succeeds in his actions much better than the adult ever will. When we say that the very young child already possesses an intelligence which guides him, we must also understand that as he passes through these different periods, the child possesses the power of constructing this intelligence.

One of the most fundamental sensitivities in the human child, is that which enables him to adapt to his environment, and learn about himself. We have observed the sensitive period for order very early in the child's life. The child who observes the position of things in the environment, needs to see something fixed and unchanging in the environment, so that he may orient himself in it. While doing so, the child who lives close to nature has an easier task than the child who lives in a modern apartment. This is because the former may see a tree which never changes its place, and this helps his orientation, whereas in an apartment objects continually change place.

This sensitivity for having things always in the same place is shown by the child in two ways—by the pleasure that he often shows in seeing a thing always in the same place, (which is very rarely noticed by the adults), and by his violent reaction when he no longer finds a thing in its place, or finds things in places where they should not be. The child who did not want to follow his sister round the table when the music teacher came to give a lesson is an example of this. The child was irritated because things which should not be on the sofa, such as the hat and coat,were placed there. The older sister no longer paid any attention to this fact, she was no longer irritated by it. In order to observe these simple facts of child behaviour, we must develop special skills which orient the observer towards childhood. To the accustomed eye, these facts can be observed at a glance.

There was once a child, only four months old, born in a rich family. He lived in a house, in the midst of a beautiful garden, which was full of flowers, birds, butterflies and plants. This child remained indifferent to all the beautiful colours and forms which surrounded him while walking in the garden but showed great enthusiasm for a white marble slab on a grey wall, with Roman characters on it. The plants swayed in the breeze, the flowers changed, the birds flew away, but this slab was always there — constant, fixed in the same place. This gave great rest to the mind of the child. This is a fundamental sensitivity in the life of the child, which in general, we adults do not take into consideration at all. We try instead, to give him variety in form and colour. This child was fortunate enough to have an intelligent adult to look after him. Every day when the child saw the white slab in the grey wall, and expressed his joy, the adult stopped and let the child look to his heart's content. This was the best help the adult could give the child.

Now, let us examine another incident in this child's life. One day, a friend came into the child's room and put a brilliantly coloured umbrella on the table. All of a sudden the child began to cry. As the child was more or less looking at the umbrella, the friend thinking that the child was attracted by the colours, offered it to the child. The child almost had convulsions. The friend had come to see the child, who had been described, as one who never cried. So suddenly, the mother did not shine in the eyes of the visitor, because of the child's behaviour. The mother did not say a word. She took the umbrella, and put it outside the door; the surface of the table looked the same as before. The child calmed down and stopped crying. The need to see things in the same place at this age is not an aesthetic need, it is a real need, and crying is the expression, of either a need, or of something that irritates the child.

Another story which illustrates this, was told to me by

a nurse who had followed our ideas, who was very good with children. She worked in the house of a rich family in England. One day, another nurse was called to substitute for her. Everything went well between the child and the substitute, except for the fact that the child did not want to be bathed by her. Every bath hour, there was a struggle and a fight. The old nurse came back and the substitute told her what had happened. Together, they discovered that the first nurse when she bathed the child took his head on her left hand and his feet on her right, while the other nurse did exactly the opposite when the child was placed in the bath tub. The child had obviously tried to make the substitute understand that this was the wrong way to bathe him, but she had not understood. The child had therefore become more and more furious.

Between one and one and a half years of age, there is this very great sensitivity to the position of the body in relation to the environment. When the child is two years old this period has almost passed. At two years, there is still a special sensitivity to the position of things in the environment, but the child no longer has such violent reactions when thwarted. In our schools, younger children are left to mingle freely with their older siblings, particularly if the younger ones reveal any disinclination to be parted from the older ones. Once it was noticed that when the children got up to go out for a walk, it was always the child of two years who noticed when something had been left out of its place. An older child, who had washed his hands, left the soap on the table instead of placing it in the dish. When the children got up to leave, a younger child looked back at the soap dish, went up to it and with great interest dropped the soap into it, and then went to join the others. Another two-year-old noticed that a chair instead of being placed in an orderly fashion, had been left sideways. He took the chair and placed it nicely by the table. The older

children simply did not notice this lack of order. They were indifferent to these small details, and their interest went towards other things.

We can follow different stages in the mental construction of children. Children between two and a half and three and a half years in my country, (perhaps also here) love to play a game called hide and seek, in which one child hides himself, and the others look for him. A table covered by a cloth makes a very good hiding place for a child. One group of children I knew loved this game. Once, a child hid himself under the table, and the others who had been outside came and began to look for him. As they took too long to find him, the child called out—"Do you not see that I am here?" All the children were then very happy to have found each other. When it was the turn of another child to hide, he hid himself under the same table. The others entered the room, and went immediately to the table to look for the child. All the children were happy again, happy to find and to be found! This activity was repeated with interest and enthusiasm, until every child had a turn to hide under the table.

Once when they asked me to play with them, I hid behind the curtain, and the children were all disappointed because I was not under the table. When I came out from behind the curtain they said—"Why do you not want to play with us?" So evidently, children of this age were not interested in finding something which was hidden, but were delighted to find it in the same place each time. It is something like walking into a dark room. We know there is a table here, or a chair there. It is the same for the child, who cannot see the person under the table, but knows he is there. That is the attraction and satisfaction.

A Swiss professor, who was proud of his children's intelligence wanted to experiment with them. There were

two arm chairs with cushions on the seat in the professor's sitting room. He placed an object in front of his child who was between two and a half and three and a half years of age, and then in full view of the child, he placed the object under the cushion. He then sent the child out of the room, removed the object and placed it under the cushion of the other arm chair. He wanted to see if the child was capable of analysis—if the child, not finding the object beneath the cushion, where it had been placed before his eyes, would be induced by the similarity of the arm chairs to look beneath the cushion of the other chair just like it. The professor recalled the child and asked him for the object. The child went straight to the first chair, raised the cushion, looked disappointed and said that it was not there. He did not look for it. The professor repeated the experiment again and again, each time with the same result. Losing patience, the professor repeated the experiment. This time, he moved the object beneath the cushion of the second chair, in full full view of the child, and then sent him out of the room. But when the child came in he once again looked in the first chair! The professor asked the child—"Did I not move the object from this chair to this one?" The child replied—"Yes, I saw you move the object, but it should be here!" To him that was the important part.

We might ask ourselves what the purpose is, of having things in the same place, in the same order. It is certain that the adult has never taught this to the child, because the adult never suspected that the young child by nature, needs order. Yet it is a fact, which can be observed. In order to find orientation in the external environment, we must start from something which is fixed. In order to be able to find our way, we must have a mental order—we must know that there is a door here, or an object there.

When we stop to think and look with the eyes of intelligence upon the child, we learn many things. Most of us

agree that it is natural for us to orient ourselves. We can speak so fluently, so naturally. We can place our hands upon different parts of our body, our eyes, our mouth. Where did we acquire this natural ability? People are accustomed to think that it is the mother who guides and teaches the child. It has always seemed that it is the adult who creates the child but this is not so. To the contrary, it is the child who creates the adult. All the movements we accomplish, which seem natural to us are a result of the construction of the child, we were once.

The adult is persuaded that by nature the child is the most disorderly being. This is a fallacy. Order is a necessary basis for the construction of the intelligence. Curiously, this is given to the child by nature. When we prepare an environment for the child, we should ensure that its first basis is the order of its objects. In the building of the intelligence we distinguish the different groups of ideas. Even when we talk, we must have order in our ideas. Otherwise there would be a great disorder, not only in the environment, but also in the ideas.

Now, if we find that at a certain age the child becomes very disorderly, we must have failed to create proper conditions in the environment offered to the child earlier. As a result he has failed to develop this order. Therefore it is necessary for us to begin all over again, trying to rebuild his sense of order.

Yet in the environment, the child may find certain obstacles, usually placed there by adults who do not understand the needs of the child. The child, on account of these obstacles cannot develop those things that he needs to develop. Then an adult comes along, who instead of trying to remove the obstacles faced by the child, tries to correct the faults which have arisen in him. This is the eternal story.

These sensitive periods are the guides which help the child in his task of construction. If we take them into consideration and utilise them for the education of the children, we will find that our task becomes much easier, and our approach assistantial.

CHAPTER 5

There are always children around us; they are easy to observe, a material of study, not lacking in the world. Truly the work of the child, who is without co-ordinated movement or speech, who is yet full of potential and power, who from nothing builds up a beginning, is worthy of our deepest attention. This mysterious and glorious being who has the capacity to develop the psychological powers that we adults possess, who takes in experiences from his environment and by doing so builds up a man, is the father from whom we inherit all the great treasures which he has been able to accumulate for us.

In his mother's womb, the unborn child does not use the organs that he will use after birth. He takes from his environment what is necessary to him. All alone he builds up the organs which will make him a living man one day.

It must not surprise us, that after birth the child becomes almost a spiritual embryo. He carries on this work of construction; he builds up the power of human intelligence, and the soul of the man in the physical body. Of course he has certain powers from nature which allow him to do so. These natural power must lead us to respect the child, and his childhood.

In order to carry out his work of construction, the child needs an environment from which he can take what he needs. In this environment, which also includes adults, the child's

great will is at work constructing organs which he does not possess. The child has a determined design inside him, which he must and does realise.

If anything which a child, three or four months old, wishes to have is offered to him, he will throw himself towards the object with his whole body, thus accomplishing a total movement of the body. After a while, when the child is older, he extends only his two arms towards an object he wants. Still later, the child only uses one hand and arm. Not only must the child come to know his own surrounding but also himself, and his own body.

Now, let me describe something which happened before my eyes. A nurse held a child in her arms. The child held a rattle, which made a kind of tinkling noise, in one hand. The child opened his hand, the rattle fell. The nurse, a very patient woman picked it up and put it in the child's hand. The child held it for a while and dropped it again. This happened over and over, and lasted as long as the adult's patience. Then the child began to do something different. When he opened his hand to let the rattle fall, he released it finger by finger till it fell. Once again the nurse picked it up and gave it to the child. The next time the child opened his hand, he did so slowly. He looked at his hand with intense absorption, as if seeking the concordance between the opening of the five fingers and the falling of the rattle. The child was in fact, studying the functioning of his own hand!

You must think of the child as a studious person. He is a student of the world. He may be compared to those young people who go to a university because of their interest in certain subjects, and spend time with professors and books. You must also think of the child as someone who is always making the greatest effort of which he is capable; an effort which may measure his entire strength.

Often, we see a small child who can hardly walk carrying

weights which are very heavy for him. In order to do this, the child must have freedom. This freedom is very rare, because the adult, as soon as he sees the child carrying a weight, immediately runs to him, takes the weight and carries it himself. It is necessary for the child to do things for himself. By substituting himself for the child in all the acts the child wants to perform, the adult closes every path of activity for the child, and thus becomes a great obstacle to the development and evolution of the child.

I shall tell you about a rich mother in New York, who had a child of one and a half years. One day, she saw her child carrying a big jug full of water from one room to another for no reason. She saw the child's intense effort as he took each step, all the while muttering—"Be careful! Be careful!" The mother watched the child for a while with great nervousness, then being unable to contain herself, took the jug from his hands and put it where he wished it placed. The child looked somewhat ashamed, and there were tears in his eyes. Later, the mother asked my advice. I told her to send for some valuable china cups, and to let the child carry one of these cups. She followed my advice. She found that the child carried the cups with great care and attention, pausing at every step until he had safely brought them to the desired place.

Another child, not quite two years old, had a very long and heavy loaf of bread, in his arms. He had to rest it on his body, walking with his head so far back that he could not see his feet. The people around, (even the dog which was there) watched the child's effort with tense anxiety as though about to render help. The adults who watched this little child, later told me how difficult it was for them to resist running to take the loaf themselves.

Think of the satisfaction the little child has when he has accomplished an action; a very real satisfaction which might be compared to the satisfaction we adults derive when

we achieve something very difficult. The child must do these exercises just as a sportsman practices his accomplishment, in order to train the movements of his muscles day after day. So, not only is the child comparable to a student of the university, but also to a sportsman preparing for a match. He is a conqueror; a conqueror of the world, and a conqueror of his own personal powers. If he is to acquire personal capacities, the capacity of doing things himself, he must train himself. If, for example, I want to play the piano, it is I who must work. I must train my hands, the movements of my fingers in order to acquire agility of movement which is necessary to play the piano efficiently. Nobody can do it for me. If anybody else does it, it is that person who acquires the capacity.

Another story concerns a child not quite two years old, in whose house was a pile of clothes, freshly washed and ironed. A set of neatly folded napkins were on the pile. The child took one of the folded napkins, held it with the greatest care, put one hand under it and carried it diagonally across the room to the opposite corner, where he put it on the ground saying—"One!" He then went back, taking the same diagonal path as if directed by some special sensitivity, and took a second napkin with the same care, carried it along the same path and put it on the top of the first saying again—"One!" He repeated the action until he had finished the whole pile. Then in the same fashion he brought all of the napkins back to the original place. Although the napkins were not in the same condition as they were originally, they were in fairly perfect order. The child was able to do this exercise without being helped by anyone. How did he feel when he finished this exercise? He felt happy.

These are some examples of the way the environment in which the child lives is used by the child. How hard he works with exactness and patience, in order to build up his

personality! But often, the adult does not allow the child to carry out these actions. He says—"Why should my child do all these things? There are so many servants to do this work!" The adult should instead try to understand the needs of the child, and try to meet them as best he can by preparing a suitable environment. Very often, the mother cannot adapt herself to let the child be active. This is usually because the mother feels that all the actions performed by the child are useless. She feels this way, only because her own mentality is so different from the child's.

In Europe, there are many things which one has to do to satisfy social customs and habits, for instance, eating with forks and spoons[1]. In most homes, usually either the nurse or the mother feeds the child. The adult takes the spoon in one hand and the child in the other and tries to feed him. Sometimes the child refuses to eat, and gets convulsions because he does not want to be fed. He wants to feed himself, while the mother wants to do it for him. When the child is left alone, he takes the spoon with one hand picks up the food, and brings it to his mouth, but often the spoon is turned upside down, and the food spilt.

I have seen a child, who rebelled when his mother fed him the first time, put spoon after spoon of soup carefully into his mouth, although spoon after spoon was spilt. The plate remained where it was, and he remained hungry yet the child was satisfied. When the soup was brought a second time, and the mother tried to feed him, the child did not rebel. Evidently he was satisfied having learnt the movement of his hand. This was more important, his appetite could be satisfied later.

1. It is important to remember that social customs and habits change from place to place and time to time. Although some of the customs and habits discussed here are dated, the Montessori approach is very adaptable and can be tailored to suit the needs of any society, in any age, by following the child.

In Italy, we watched a little child eating, and noted his movements point by point. He had macaroni in his hand. He was too small to understand the exact co-ordination of movement needed to eat it. So he carried it close to his nose, placed it by his cheek, and finally managed to put it into his mouth. He had to learn the movements involved.

One of the things which is most difficult for the adult, is to judge the efforts and the needs of the child. Even if the child does not succeed in his effort, the adult should not interrupt his actions. The difficulty with the adult is that he feels irritated when the child is trying to perform an action which he thinks unnecessary.

The rhythm of movement of the child is very different from the rhythm of the adult movement. We find it next to impossible to change our rhythm of movement. Perhaps this is because rhythm is a part of our make up and of our constitution.

I have seen a nurse, able to take care of a wound, cure it and stand all the things from a wounded person, unable to nurse a paralytic man who was trying to drink. His hand trembled, and the nurse could not stand it. She wanted to give him the drink. We adults are capable of caring for others. We like to help those who cannot take care of themselves.

In the same way, we like to do everything for the child. In fact we do it. As compared to an adult the child's methods of performing actions are painfully slow. The one thing we cannot do is to renoucnce our rhythm to give space to the child, to let him do things slowly and painfully as is his nature to do, according to his own rhythm.

CHAPTER 6

In the United States, a patent[1] has been taken out which is of great interest. Someone in America interested in the culture of bees, found that treating the eggs of the bees with a certain ultraviolet ray produced bees that had no sting, that made honey which was more substantial and more nourishing. He had already tried to treat the adult bees without any success.

If one day, humanity can be persuaded to direct its actions towards childhood rather than towards adult, perhaps we shall produce a humanity more constructively productive, and no longer in discord. We should dedicate at least one thought everyday to the great hope that humanity has in childhood; a real and constructive road on which humanity has to go, on which it is now just taking its first steps.

I will now go back to the main task of trying to make you personally acquainted with the child, the way be observes and reasons, and the way in which his intelligence acts and expresses itself.

In order to understand the child, we must have a special family, who consider the child's needs, who give the child freedom, and who admit the child to our company. The child must not be sent away from our company, he must be free to go, or stay while we continue our daily activities.

1. The word used in the original manuscript is *copyright.*

I will now tell you of an incident which took place in the house of a lady, giving a tea party. The guests consisted of few friends of the lady. A child of about twenty months was sitting on a carpet in the room where the tea party was going on. His mother talked about children's literature, commenting on the ugly things printed for children. She told the story in one of these books of Little Black Sambo on whose birthday his parents had given him a new coat, a new umbrella and all kinds of things. The little boy puts on all this finery and goes out to show it off, without saying anything to his mother. On his way through the jungle he meets a tiger who wants to eat him. In order to free himself the child gives away his umbrella. Then he meets a snake, and the poor boy gives up his coat in order to save himself. One by one he meets other creatures and gives up everything he has, and returns to his house without anything on. Although his parents scold him everything turns out well, and the story ends with Sambo being very happy.

When the mother was telling this story to the other ladies, nobody paid any attention to the child when all of a sudden he said—"No!" Then he said—"*Lola!*". The mother thought it curious that he should remember a nurse named Lola whom he had had for only a few months. The child listened to the mother, and then began to cry saying—"No, no, *lola, lola.*" In the end, the child got up and took the book which the mother had been showing her friends, and pointed to the back cover of the book on which there was a picture of little Sambo crying.

Lola is also a word for weeping. The mother referred to the contents of the book when she said that the story finished with Sambo being happy. For the child the end was not on the inside, but on the outside. There were two interpretations, one of the adult, and the other of the child. The child showed that the book finished with a Sambo who cried, not a Sambo who was happy. The curious part is

that this child (just a little more than one and a half years) had been able to follow the entire conversation, and also grasp the content of the book, and relate the two in such a striking fashion.

The child and adult have each a different type of intelligence. The child's intelligence evolves and changes with age. The adult fixes his attention on a whole, while the child fixes his attention on sensorial details. If the child had not shown what he meant, the adult would have thought him stupid because he started to cry on remembering his old nurse. The child must have thought how stupid were the people who could not see that the book finished with the picture on the back cover. So often the child and the adult misunderstand each other. Very likely it is a mutual kind of underestimation. The child has no great faith in the intelligence of the adult.

This child interested me very much and I wished to know him better. So I went to the child and asked him show me some of his things. The child told me he had an automobile, he called it a *toto*. I thought it curious that such a small child should be interested in a machine. Instead of a toy automobile, the child brought out a large package of illustrated postcards. Then I understood. The child wanted to show me a picture of an automobile. So I went through, these cards looking for the automobile. I found pictures of all kinds of things, wild animals, domesticated animals flowers and plants, but in that enormous collection of post cards I could not find an automobile. I told the child that I could not see any automobile. The child with great excitement showed me a picture postcard of a big hunting dog. A little further back in the picture was a man with a gun going hunting, and still further back towards the horizon was a house. I was very perplexed. Then the child pointed at an almost invisible spot, a point at the side of the picture. There was a representation of the road which went up to the

house and on that road a tiny spot represented an automobile going to the house. This was what the child found interesting among so many things! The automobile was represented as a tiny speck yet that to him was worthy of interest, worthy of being shown. The rest was of no interest.

The child is interested in everything visible in his first year of life. I may say in fact, that in the first year, all that is visible has been exhausted. So the second year of life is a period in the development of the human intelligence, in which the individual becomes interested in those things which are almost invisible. To almost discover things, that is what interests the child. Of course the child also sees all the obvious things,but they do not awaken his emotions., His sensitivities and his enthusiasm are aroused by small, tiny, apparently insignificant things.

One day I saw a child about two years old, on the terrace of his house. There was a garden with some stone steps and the child was alone in the garden. I heard him laughing so hard, and with such enthusiasm that he did not sound like a child. I thought to myself, here is a happy child. He is free, in the garden where there are so many beautiful flowers. He is very happy surrounded by nature. I went to see what the child was contemplating. There was the child, with his back turned to the beautiful flowers, facing the gray wall and looking at the ground. He was laughing. There was nothing on the ground, and still the child continued to laugh. I looked again, and there was a small little insect running on a stone in front of the child. The child was happy to see that something so tiny could be alive, and could run so fast. The flowers he had seen. What interested him now was something new. It did not matter that it was small. Certainly there is beauty among the flowers, the birds and the trees, but these things were old, and could not arouse enthusiasm like something new, however small.

By watching a child we can understand that his mentality

is like ours in a way; all the things we like, do not arouse our enthusiasm. Do you see the contrast between something beautiful we like and enjoy, but which brings no change into our life, and something which arouses our enthusiasm and compels us to act, to vibrate? We try to make the child happy, to make his environment pleasant, and put him in contact with nature, but if there is nothing there besides that, his interest and his intelligence will become sluggish. The same may be said of adults. We may have a beautiful house, a garden, or an automobile. Our happiness is not dependent on these things. What we need is something new. To seek the new, this is the nature of man. This is why it is so difficult to render people happy. Usually we think of making people happy by giving them conditions in which life lulls them. However, when we give them everything they want they are not happy. We must therefore, help the child to find upliftment, and elevation. This will make him happy, and give him satisfaction. We must learn to distinguish between the child who is merely content and satisfied, and the child who is enthusiastic. It is very important to go near the child, to try to understand him.

I wish to tell you of another experiment I carried out with a small child. It was my intention to tell the child a story. In order to make the child understand, I thought of showing him a book with illustrations. I wanted to see what effect the pictures had on the child, and also what the child understood of the story. I showed him a picture which represented a religious scene, and tried to give him a religious explanation. We were in a Christian country, and the picture was of Jesus Christ. I tried to make the child enjoy the beautifully painted picture in which Jesus was surrounded by children. I told him how much Jesus loved children, and how happy they were to be around him. The child looked at the picture with complete indifference. I felt humiliated at having achieved so little success. I turned

the pages and passed on to other pictures. After I had turned two or three pages the child stopped me and said—"Sleep." I asked—"Who is asleep?" The child said—"Jesus Christ!" I asked puzzled— "Jesus Christ asleep?" The child said—"Yes, yes!" I turned back the pages, and saw that Jesus Christ being very tall was looking down on the children, and hence appeared to have his eyes closed. What had interested the child? It was the small detail, the tiny particular. Why? It is because the child at this stage is interested in tiny things. On one side is the adult who feels the greatness of things, who tries to make the child enjoy a part of what he feels, and on the other side is the child, who very positively looks for, and finds small details.

Another time, I had a beautiful picture representing a very famous Italian picture of a religious character painted by Raphael, whose works are known to us in tiny details, because they are classics of art in our country. The colours were very beautiful, and had been well reproduced. It was a picture of Jesus Christ set at the top of a mountain, in the midst of clouds. He was ascending from the earth, and around him were a number of people, looking at him with surprise and astonishment. It was a picture which touched the heart and the imagination, and I told the child— "Here is Jesus going to Heaven. The people are looking at Him with surprise and marvelling." The child was indifferent and kept playing with a coral pendant shaped like a rabbit which he wore around his neck. When I stopped speaking he said—"This is a rabbit!" I discarded the picture and tried to find something else which would interest the child. I thought that my explanation was too complex for him and he had hence become interested in his own pendant. However the child kept pointing to the picture saying—"Rabbit, rabbit!" Indeed there was a little tiny rabbit! In the picture of Christ going to Heaven, the child saw a tiny little rabbit, which no one else noticed.

We can thus put within reach of children, artistic things expressing culture and religion, without doing any harm to the child's mental growth, because he will only take in that which interests him, and is within his reach. This is a great relief to us as educators, because if we had to penetrate into the consciousness of the child, it would be terrible for him and for us. We have now only to give him what is beautiful, and he will take from it that which is suitable for him.

The child is an explorer of nature, and of whatever there is around him, and he takes things in according to the sensitivities of different sensitive periods. Perhaps even up to the age of five years, it is impossible for anyone to teach the child anything. We try to explain things but he pays no attention. This is why psychologists have said that the small child is incapable of learning anything.

Yet this is the most marvellous, almost a miraculous age. It is almost a miracle, that such a small child, can learn such an enormous amount, is such a short time. It is not we who teach him. This child can run, walk, talk, and notice tiny little things. He has done it all by himself. It is not we adults who have done it for him.

This is therefore a special period, a period during which the child carries out the most difficult studies of his whole life. Only he must take for himself by his own special method. He cannot receive from us. We cannot be teachers but we can help children, and our work must be to render this tremendous work of exploration which he carries out, easier. We must try to prepare for him a suitable and favourable environment. We must be persuaded that we are humble people, who cannot do anything but witness this enormous capacity for self-development in the child.

This is why it is necessary, first of all, for the teacher to become humble. The teacher must realise that within the child there is a powerful energy on which he is continually

drawing, an energy which has nothing to do with the adult. The adult must understand that he is not the creator behind the child, but that he is the humble servant of this marvellous expression of life. He must try to arouse within himself this attitude of humility, which is after all an attitude of love towards the child. In such a condition—the adult leaving the child free, facilitating his task and protecting him—we can see the seeds of peace being sown in the world.

CHAPTER 7

Being able to speak is something everyone takes for granted. Everyone talks, and listens to others talk, yet no one pays much attention. If we stop to think about it, it is a phenomenon likely to awaken the greatest interest. Language is a natural phenomenon, so much so, that today language is being taken into consideration when the history of nature is studied. It is like a living organism. Language is born, with the centuries it develops, sometimes it degenerates, often it even dies and disappears. From a language (as if the language were a mother) other languages are derived (as if they were children). Language touches both nature, and the history of humanity. A new language is a natural phenomenon, and it is an important social factor.

Today, those who make their life's work the study of language, give great consideration to the development of language in the small child, because it throws a great deal of light on their study. Without any doubt, language first of all must be considered as a human expression in itself, as an expression of man in the society of other men, and as the expression of the intelligence. It is in the very nature of man to create language, to create new words, to put together sounds.

What is a word? A word is the placing together of a certain number of sounds; that which gives meaning to the word is the decision of men. In themselves these sounds

have no sense. To a group of people, a special group of sounds will mean a certain idea. So a word is the symbol of an idea, but it is also a contract between certain parties. When a group of people have reached an agreement, that certain sounds shall mean a certain idea, they can communicate among themselves. The intelligence of man creates this material, so that with it they can communicate with other men. If there was no common language, man could not accomplish anything.

The task of man is to accomplish great things in the world. These great things are not the result of an individual's work, but are the result of the association of men. Man has got hands with which to work, but had he no language he would not be able to work. In order to work he must work in collaboration with other men. He could not work in collaboration with other men, unless he understood them. In order to understand them, he must have a language with which to make himself understood. So language is spiritual, because it has no solidity of form, and yet without it, even if man possessed machinery, no work could be done.

In the Bible there is a story of the Tower of Babel.[1] The inhabitants of a city called Babel decide to build a tower so tall that it would reach Heaven. The means were not lacking, the stones were there, as were the men to do the work, and the good will to accomplish the work. But all of a sudden, the men did not understand each other any longer when they spoke, and the building had to stop. All the necessary materials were there, a great heap of stones, many carts and ropes and pulleys. The only material lacking was the spiritual material of language. It is a beautiful, symbolic tale. When we look upon the monuments in the world we must remember, that they were not only built up

1. The people of Babylon wanted to build a tower which would reach Heaven. God "confounded" their language and the tower was never completed. *The Bible, Genesis xi*

with materials, by hands using implements. Humanity which seems so materialistic in these dealings, in reality depends on something which is incalculable, which is mere breath—that which we call language.

In the evolution of language, it is certain that it is the adult who created language, and made it richer in sound and word. Every time man found a new object, he must have indicated it by a word, in order to tell other people about it. Every time a new object was found, it received a name, but that was not sufficient. It was also necessary for everyone to agree on the name of the object. Look at the dictionary, look at all the modern discoveries of facts. If sentiments are to be expressed with more refinement than there are words for, such expression must be given new words. It is also necessary that everyone agrees on the meaning of those words. Why this refinement in order to understand each other more perfectly? It is in order to express our ideas in their utmost completeness.

Language is the spiritual patrimony of a group of people who have greatly evolved. The evolution of a certain determined human group, and the evolution of language go together because language represents the evolution of thought of that group, through the centuries. If one group cannot understand another it is because there has been no accord. The sounds of one group are not the sounds of the other, it is another language. This is the importance that language represents for the group. What an obstacle it is between groups!

Yet language is effervescent, so slight in its differences that it is almost impossible to distinguish. Each detail of each sound is determined—the intonation, the cadence of the voice, the accent. How could each group keep these delicate differences and intonations century after century? Each group possessing a language of its own would have to

have registering machines to register each sound in its completeness. How impossible that would be! What a terrible, tremendous study it would represent for the adult to study all the sounds which make up a language! It would be an impossibility. At the base of every language is the great register of the sounds of the language—the child.

The child is, as it were, a machine made by nature for this task. The child hears the sounds exactly. That is in itself marvellous. There may be an adult who understands music, who can recognise small differences in sounds, who yet cannot reproduce the sounds of a foriegn language correctly because he cannot hear the differences. It is not a lack of preparation in the ear, but something else. The child has no preparation either, yet nature has given him this immeasurable gift which is that of registering and fixing these sounds in exact measure. The adult prepares the intelligent part, the child takes it up, fixes it, keeps it.

The child seems to possess a thread, which joins the ear to the organs of speech, so that the sounds heard by the child are reproduced exactly by his organs of speech. This is a wonderful mechanism. In the adult, it is as though that thread which joins the ear to the organs of speech has been broken. The ear does not register sounds any more, and the organs of speech cannot reproduce them any longer. What happens when an adult learns a new language? It is as though he were deaf. The adult can never reproduce the sounds exactly, and has to study hard in order to learn all the words. The adult in this sense, appears very stupid. For instance if Indians try to study Italian, they will go to a university and study all kinds of books, for three or four years, yet their Italian will not be Italian. Yet if we go to Italy, we will find poor children, just three years old, speaking Italian. This condition of nature, made by God, is the means by which a group can keep and perpetuate its own language.

Language which is of such great social importance, has in the child a great worker, and a great keeper. All people have two flags, to represent the limits of their human group. One is the national flag, which represents the limits of the land occupied by the group. The adult makes up the fence which keeps this territory within its limits. The other flag is the language of the people. This is the flag of the child. The child is the defender of the language of the group to which he belongs. He is a fighter with whom no transactions can be made. You may perhaps see people who change their territory, but the child keeps it in its exactness. How will we be able to follow the path of the people who have changed their territory? It is through their language.

This is why the child is of enormous social importance for the life of the group, for the very life of the people. The child is an entity who has an important task without which our history could not be explained. Many adult problems cannot be solved, unless the child is taken into consideration. It is very necessary therefore, to study the child as a being to be helped and educated.

CHAPTER 8

I compared the child to a machine which registered sounds to give you some idea of the extraordinary powers of the child. The child however, does not register passively like a machine. He acquires this faculty through intense and fatiguing personal activity.

A new-born child tries to use organs which have never functioned before. He uses certain speech organs to carry out certain movements preparatory to speaking. For instance, the movement of his lips while sucking milk, and the vibration of the vocal chords while crying are in themselves a preparation for speech.

The sucking and the crying, are movements of the whole mass of muscles. What a difference between these rough movements and the fine movements of articulated language in which to produce a special sound, little fibres chosen from different groups of muscles, vibrate. Even if we take only the rougher kind of sounds such as the vowels *a*, *aw*, *oo* in our language, slight little movements produce the different sounds. Besides these, there are what we call the half-vowel, and consonants which sound together with the vowels which are indescribable. Who has taught the child the extraordinary technique required to reproduce these different little sounds exactly? What an enormous amount of work has to be done by the child to learn the co-ordination of the different groups of muscles!

When we begin to seek the origin of all this, and in-

vestigate the cause of the sucking movement, we find the powerful sensation of hunger. When we investigate the cause for the crying, we find the sensation of pain, a powerful stimulus. What causes the child to try to reproduce these tiny little sounds, each little sound distinct from the enormous multitude of other sounds?

If we take in our arms a child of four months, bend our face towards the child's face, and begin to talk to him quietly, we will see that this child looks at us with an extraordinary interest. He will look at our throat, at the movement of our lips, (sometimes moving his lips without any sound) and the movement of our cheeks. Is it not extraordinary that the child should listen to the sound of our voice? Why does he look at us so intently? Why does he watch the movements of our throat, cheeks and lips? Evidently something in the child tells him that the sounds he hears are produced by the organs he sees moving in front of him. Thus by watching, the child carries out a study of those movements, and the functioning of those organs.

This may perhaps be called an instinct, comparable to those found in animals. It is a strength, a directive, given to the human child so that he may observe, understand and photograph the little fibres he sees vibrating before his wondering eyes, so as to be able to reproduce them in his body. This instinct, is not hereditary. It is not merely the power of being able to acquire the mother-tongue, (if the child is kept away from his mother in another country, he will soon begin to speak the language of that country) but the power of acquiring and keeping a language alive.

Every one knows that a child of four months is quite developed. Scientific experiments conducted in several countries by children's doctors who have established dispensaries and clinics for children in modern times have

shown that after the age of six months the child is in need of a great many social relations because otherwise he suffers from boredom, becoming very depressed, very unhappy and even falling ill. The child at this age has a real need for companionship, a real need for people around who are happy and talking to him. It is certain that these social aids that the child requires, are especially necessary for the development of language in the child.

It is known that the child learns to talk by using words of two syllables, usually these syllables are but the repetition of one syllable, (something like *mama, papa, tata, fifi...*) and by these different words of two syllables the child distinguishes different objects. Yet the child hears and recognises the words, which means that he understands the words. Even with this clear idea he has to make a great effort in order to animate the organs necessary for reproducing those words. Therefore he makes words which are nearest in their possibility to the ones he hears. For instance the child in Italy hears the word automobile. But the only sounds he is able to reproduce is auta and so he says *tata* for automobile. He does the same with many other words. He understands the words when they are spoken, and the idea represented by them, but can repeat only one syllable out of it. Now the adult who hears the child express himself in this fashion, instead of continuing to talk to the child clearly and to pronounce the words exactly as they should be pronounced, begins to reproduce the sounds and the words of the baby (what he calls baby talk). So instead of the baby trying to imitate the adult, it is the adult who imitates the baby. In this way the adult becomes an obstacle to the development of language in the child. Thus if an adult in Italy says *tata* instead of repeating the word automobile correctly to the child, he does not help the child but limits him to the accomplishment which he has already reached, of uttering the word *tata* for the automobile.

Therefore the help to be offered to the child, is to speak to him in the most perfect way possible.

Usually when the child is a year old, he bursts into three syllable words. It really is an explosion, an explosion of words. So great is his enthusiasm that the child makes words of three syllables, from words of two syllables, for instance *mamola* instead of *mama*, and *papola* instead of *papa*. I wanted to see the extent of the vocabulary at the disposal of a child of a year and a half, and I counted two hundred words the meanings of which, of course, he knew exactly and which he used to express certain ideas. The curious thing was that the child also had the faculty of distinguishing the nature of the words that he had at his disposal. For instance, once numbers were mentioned, he was able to say one, two, three, thousand, one hundred and so on. It is indeed extraordinary that at that age the child was able to distinguish the difference between the words that represented numbers and the words which represented other ideas. He might have said one, two, three, and then blue house, horse and so on. Yet he did not. He was able to distinguish all the words which were numbers (though not in the natural succession). He did the same with colours. Once colours were mentioned, the child mentioned only colours. He had made a group of them. This shows that while the language is developing, the intelligence is also developing, the intelligence which not only recognises the words, but classifies them according to their nature.

The child acquires his language, we might say, by chance. He acquires it in the family, by hearing people talk without paying any attention to the child who is listening to these words, who later speaks them from the memory of what he has heard. If only we realised that the child is an intelligent being, that he understands and is carrying out work and study, we would converse with the child. Thus we might make it easier for the child to acquire his language and

perfect the means that nature has given to the child to learn it. In other words, we might facilitate the work of nature.

At this age even without help, the child acquires so many things that we cannot but say that he has a marvellous power. If we take children between the ages of two and a half and three to a new country, to the language of which we ourselves are strangers, we will find after fifteen days, that not only have the children acquired the language of that country and can carry on conversation in that language with other children, but that they have acquired the special intonation of that town or that village. This is why I said that the child is as a registering machine of the sounds of language.

The child passes through what may be called sensitive periods in his acquisition of language. There is the first period, in which the child's sensitivity is directed towards the registering and fixing of the sounds that he hears. There is then the second period, in which the child registers not only the nomenclature of things, but also the construction of the language, the way in which the words succeed one another in order to express ideas. We may say that the child is carrying out a grammatical study of the language. Instead of saying—"I want bread," the child might say,—"Bread want..." The words might come one after another without any special order, but the child expresses himself grammatically, and so he has a sensitivity for the construction of the language, as well as for registering the words. When you say to the child—"If you will be good, I will give you this," he understands that the words have something to do with his future. How well the child understands the plural and the singular, the masculine and feminine! He is able to distinguish them all.

Within the child's mind there is a special insterest in the form of speech to render him capable of grasping the grammar, by simply hearing people talking around him.

This is based on fact, my experience with children. In fact, it surprised me, for I could not imagine such a thing. The child taught me that it is his joy, to grasp a new word and to distinguish all the sounds that compose it.

There is positively a great work going on in the mind of the child during the first year. We know that the child has reached very high development in language when he is seven years old, because he never stops talking. He interrupts every conversation he comes across, and gabbles and gabbles. It is then that his language has reached maturity. The child throws it out with such energy, vehemence and enthusiasm, that there is nothing which can stem it. Then, of course, the adult gives the usual help. He says—"Shut up, do not always ask the same question!"

This is the time in which the child can study the the physiological part of the language in a scientific way, the construction, the grammar and the syntax. If we start teaching the child of seven years to write, it is too late, because the child of seven years is already a literate man. He is a poet, and a writer. His language is entirely and completely developed. If, for instance, an Italian family went to the United States with a child of seven years, it is this child who immediately learns the construction and functioning of that language. In fact he learns it very well, while the father and mother will always make mistakes.

The child has a sensitive period, with different phases for different interests, for the development of language. We can make use of these different phases of this sensitive period in order to impart culture to the child. The chld must learn how to write, while he is still in that sensitive period. The child learns many words, and therefore acquires many notions in certain phases of this sensitive period for language. The child will find great joy in studying the different aspects of language if the study is facilitated at the exactly correct

time. Therefore the sensitive period is, a very precious guide for education. Thus when we speak the positive way to impart notions of culture to children, we shall base ourselves upon this natural fact. It is the sensitive period that furnishes pleasure and joy to the child in learning, and it is this which ensures success in introducing the first elements of culture to the child.

CHAPTER 9

The child does not like to be afraid, but likes to be happy carrying out activities he sees around him in his environment. Much of what he sees however, he is not ready to carry out correctly. Even if he were capable of carrying out what he sees correctly, the work is of no use in terms of social utility. So in reality his effort is but spontaneous activity for self-exercise.

Children live in a realm, different from that of their mothers. They carry out activities imperfectly, but it would be stupid of the mother to try to impede the child, by imposing her own reason on him. The child cannot use all the things that an adult does so it is necessary to prepare an environment for the child himself. The mother is then left free to do whatever work she has to do in the house, and the child is free to carry out his own exercises, without bothering other people. The child can then carry out the actions in his own realm, in his own imperfect way, freely and without interruption. This is the idea that lies behind the creation of an environment for the child.

These preparations for an environment for the child is the common idea of what a school should be. We do not say that we want to prepare a school for the children, we wish to prepare an environment for life, where the child can develop a life. That is why we call this institution a House of Children. The idea is to give the children a house

of their own, a house in which they are the masters of themselves, in which they can act as they please. It is evident, that in order to be active, we do not move for the sake of physical movement. To be active, we must have objects around. In this house we must have something to do. It is only when we have something to do in the house, that we may amuse ourselves in the house. That is why, the first time we built this kind of environment for children in Europe, we tried to keep the same objects at the child's disposal, in such a way as to be static as far as possible. Not only the objects, but also all the furniture that was around him, was build to be in proportion to the strength of the child, and to the physical proportions of his body. We also tried to have only vivacious objects which were brilliant, shining, light and attractive. It was almost what you would call play. It was not play because the children carried out real actions which form part of the daily activities of the people around them. We have tried to prepare the same environment here, adapting it to the Indian way of life. In this environment, the teacher must initiate the child to the different actions. Otherwise, it is very likely that the child will be most confused by the objects, and would not know what to do with them.

If we wish to show the child how to dust a table, we must have a piece of cloth reduced to a fourth of the usual size to take the dust off. The table must be proportionate to the size of the child, as the child's hand is also small. Several of these cloths must be available so that many children can do the same exercise, at the same time. The finish of the table must be such that it loses its shine when even a small amount of dust settles on it. In such a case the table acquires a quality, almost a voice, that calls to the child,—"Come, I am full of dust, come and take the dust away!" If the dust is very visible on the table, it is much more pleasant to see the result when the dust is taken off,

and the table shines again. If the tables in the environment are only in dark colurs, because we have dark wood or because dark is less costly than light colours, then the teaching power of the table disappears and we do not get all the results we want.

This object[1] has got many qualities. It is white, clean, and small, but it has, what we can call educative action. The fragility of the object inspires the child to handle it carefully. If it falls on the ground, it breaks, it is a great warning to the child. It calls forth his attention to the fact, that his inability to move the object with care has caused this misfortune. In turn it calls the attention of the child to his own movement. If instead, the object was made of metal and did not break on falling to the ground, it would not call the attention of the child to the care he should take in moving it.

Now we thought that these children might find pleasure in carrying out with these objects, action which they saw usually carried out around them in their homes, and that they would work somewhat like their mothers who worked in their homes. Instead of this, we observed a phenomenon which we did not expect. We saw a child clean the table with a care absolutely out of proportion to the amount of dust that the table carried. Not only did he clean the top of the table, but also the edges, below the edges, the corners and the legs of the table, and with an exactitude that was evidently more than the mere cleaning of the table. When he had finished cleaning the table so carefully, he looked at the perfectly shining table, and started all other again to clean the table with the same extreme care.

We noticed that all the child adopted the same method

1. During the course of the lecture demonstrations, many objects must have been held up to the students. The object referred to here is probably a porcelain jug.

for their actions. We placed at the disposal of the children little copper and brass vessels and also materials for cleaning these objects. One child took one of the objects and cleaned it well until it was shining beautifully. Then he took the cleaning materials again and started to clean the object all over again. Other children who watched the first child clean the object two or three times, would take the same object and clean it again two or three times. This, is because the child needs to carry out certain determined exercises. It is evident that the child carries out these actions not with the same aim that adults have which is to clean the vessel, but with another aim, an inner aim, which compelled him to carry out these actions so as to exercise himself. It is as if the child has an instinct to form his own co-ordination by carrying out actions on objects which surround him in the external environment. The child carries out this action upon this object, because it is a means of concentrating the attention on a series of movements. For the child the purpose of the activity is the activity itself, the activity attracts attention and acts upon the vessel, making him do a certain series of movements which evidently develop something inside him, bringing him satisfaction. Therefore, it is not surprising that once he has been initiated into cleaning, he starts to do the same action again, because it is not the cleaning, it is the action which is attractive to the child, while the object is a mere point of crystallisation, a point of fixing its activity. As this has happened again and again we call this special characteristic of the child, repetition of the exercises. The action upon the object is not a purpose, a name in itself, but a means, a means for the child to develop his own personality!

At one time, a European gentleman came to one of our schools. He had on an overcoat which had five or six buttons and the same number of button holes. The gentleman had not buttoned his coat. When he sat down

on a chair, suddenly a child got up and came to him, and very patiently began to button up his coat. The gentleman was flattered. He said—"How nice of you to do that for me, it is very kind of you!" The child did not pay any attention to the gentleman's compliments. As soon as he finished buttoning, he started unbuttoning, and then buttoning again and yet again. The poor gentleman was embarrassed. He asked—"How long will this go on?" The purpose of the child evidently, was not that of buttoning the coat of the gentleman, but to carry out the exercise.

Adults entrusted with the care of children should respect this repetitive activity of the child. One child took a long time to put on a shoe and even more time to tie up the lace. As soon as she had finished, she started doing again with a great effort of patience that which the nurse could do quickly. This makes it clear why a separate environment is necessary for the child to carry out these actions, in this own time.

Another interesting fact, to which my attention has been repeatedly drawn, is the child's interest in carrying out and repeating the exercises with exactitude. This is a guide to us when we initiate the child into different activities. If we offer the child an activity carried out in an exact fashion, we help the child.

Now I take this little cup and I place it in this copper tray, then I take the small jug full of uncooked rice and very carefully place it near the cup. I grasp this object which is small, to suit the hand of the child, and light to suit the strength of the child's hand of the child. I show child the movements necessary to pour this rice into the cup. This is a movement so simple to us, that we carry it out without putting effort into the movement, without paying attention to the action. Look at the real effort needed to pour this rice into the little cup. I must take the jug by the handle,

then I have to lift the jug up a little bit, then I must bring it near the cup, then I must bring it near the cup, then I must slowly tilt this jug in such a fashion as the beak of the jug comes over the middle of the cup and continue tilting it until the rice starts pouring out. Then when the rice is enough to satisfy my desire, I have to tilt it up again, over the cup, and separate it from the cup. When it is in a vertical position I have to lower my hands until the base of the cup reaches the tray. I have to open my fingers to let go of the handle and then bring my hand to position. This we might call the analysis of movement. It really amounts to concentrating, upon the different parts that compose the complex action. The aim of the exercise is to put the rice inside the cup. I can also do the exercise in reverse, taking the cup to pour the rice into the jug, which is really much more difficult. We see how difficult it is, by the fact that while the action is carried out, some of the rice is strewn on the tray. If I can continue carrying out this exercise, in the beginning a great deal of rice will fall out not only on the tray, but probably also on the ground! The exercise can be controlled because the child is told that he should pour without letting any rice fall out. The fact that the rice does fall out is in itself an indication that the child's movements are not perfect. Gradually the movements become so perfect that no rice is spilt out of the cup, or the jug. So, the purpose of the exercise is to help perfect the movement of the child. The same can be said of water or any other liquid. If my hands are not prepared enough then, I spill some of the water out of the cup. Later on, if I pay attention, I will carry out the movement so that none of the water spills.

So in a prepared environment, we can think of a series of exercises which will call the attention of the child to his own movements, which will lead the child to handle all objects with care, which will make him move with attention

amidst pieces of furniture around him, without bumping against them. This will help bring the child to the perfection of the movement, and to the perfect acquisition of his co-ordination. Nature has given to the child, the urge to build, and to make him master of his own movements. In the prepared environment, we give him means by which he can do so in an intelligent fashion. The preparation of this phenomenon, and the exact way in which children are shown how to carry out these actions draw attention to the objects. The child is his own critic, and strives to carry out work perfectly controlling his error. While trying to become master of his own hand, he finds the object more severe than a teacher. A teacher would never have the heart to scold the child because he has not been careful. The teacher might say—"Poor little boy, that is really too much for him." The teacher has a great deal of compassion for the incapacity of the child, and will avoid giving him fragile things that will break, or metal things which might make too much noise. In contrast to the compassionate soul of the teacher, the object, is severe. If the child does not carry out his action well, it cries out in such a fashion, that everyone around hears it and the poor child is ashamed. The object is a teacher that never forgives and reveals every little error that one commits. It is a scolding that the child does not mind. The object is a friend of the child and he does not feel humiliated by the scolding of the teacher. The child will continue to love it very much and will keep it as clean as possible. When the child is centered into this kind of attraction, we become very imperfect by comparison. How much attention must I give to an exercise pouring water!

Psychologists say that the child cannot fix his attention. James, a great American psychologist, once said that if you have succeeded in detaining upon human action the attention of the children, then the problem of education is solved. In all these exercises, the movement of the child

is developed and his attention captured. By these exercises, the wandering mind of the child, becomes fixed. Movement is the secret for holding the attention of the child, in sense and in impression. The mind of the child cannot be fixed and stopped by a colour because it will not see one thing alone, but also something else. It cannot be fixed by verbal explanations because the mind of the child will wander, and listen to something else. An interesting object, a series of movements revolving around this object, and the fixing of attention by the action being done, is the most effective manner of calling the wandering mind of the child. The education of the mind of the child, is thus tied up to his movements and to the education of these movements.

CHAPTER 10

The child has a natural and irresistible tendency towards work. This principle (it is not the one commonly held), should be well fixed, and very clear in our minds. When I observed this phenomenon I was surprised, and it led me to think, to ponder and to doubt for a long time until I was couvinced. The tendency to work is tied up with the nature of the child, and therefore with human nature. When the child is left free to work in an environment prepared for him, when he is free to act, he has the tendency to organise a set of movements around an idea, which constitutes a definite aim — work. The child concentrates upon the work, repeating it again and again to perfect it by his own movement, this helps us understand the path the child follows to achieve development.

It is extremely logical, that it is through activity alone that the mind can concentrate. It is also extremely logical that man can express his mind through the flesh, by means of the muscle, and that he should begin to make his mind work by means of movement, by means of activity. In fact, the mind of the individual communicates with the mind of other individuals, and exchanges thoughts with them by means of movement, because language is movement. Therefore the child begins by organising his movement, by developing his body because it is through this body that he can express his spirit, his soul. If we reflect upon the task of humanity we find that it is work. Man is an intelligent

being who works in this world through his intelligence. When the child spontaneously repeats his exercises again and again he shows us that in humanity there exists an instinct to work.

Adults generally believe that children wish to be helped, to be carried in their mother's arms. They rarely recognise the real and powerful forces within the child that guide the development of man. When the child is given the means with which to act and the freedom to act, he reveals the highest qualities that his soul possesses. He does not wish to be helped, and tries to work independently to do things by himself.

It is marvellous how nature urges the child to seek independence. Without independence there is no functioning individuality. Let the child alone, leave him to act for himself without your help. To grow, to develop is to reach from one degree of independence, to a superior much more perfect degree of independence. To be independent is merely to express one's own individuality. If one stops to think about it, the child, by process of birth becomes independent from his mother. Before birth it was the mother who breathed, it was the blood of the mother that circulated in the child, it was the mother who functioned for the child. After birth, the child functions for himself. For the first time, his lungs and his digestive system begin to function, and for he first time the child asserts himself on the level of independence. By acquiring this independence, the child assumes the responsibility of this independence. Mankind can acquire its independence only through effort. We do not say when the child is born—"Poor little child, now he has to breathe for himself!" We say—"A man is born!" We are happy.

At birth the child needs nourishment from his mother from the natural point of view. If the mother falls ill, the

child falls ill. In olden times, if the mother died, the child was also in danger of death because the food did not suit him. In time however, the child no longer depends upon the mother. Teeth begin to appear inside his mouth, gastric juices, come for the first time into his stomach. He certainly suffers as he is perfecting his independence. Soon the child can eat anything, he can eat everything. If the mother falls ill at this time, the child has acquired a degree of independence which ensures his continued good health. He has his set of teeth now, and can eat alone, for himself.

On what is he dependent now? He does not know how to express himself, and it is difficult to interpret the needs of the children. We can ask why he is crying. Is he hungry? Is he ill? We are trying to interpret the expressions of the child. He is dependent on those who have to interpret what he means. The day comes when the child becomes independent from the diviners who have had to imagine his needs. When the child begins to express himself, he is more developed. Still he cannot get about by himself. He needs someone to carry him, or put him in a perambulator. The day will come when he can say—"I do not need you any longer. I have my own feet, I can move by myself!"

Development and growth are nothing but one conquest after another of perfect independence of the functioning individual. Therefore it is not surprising, that the child should seek not to be helped by adults, that in his social expression, in his social life, he should try to act for himself. It is but one more step in growth. We see that it is both conquest, and the acquiring of individuality. With every a new degree of independence the child has some additional responsibility of work. So the tendency of life is not that of doing nothing, is not that of resting, but that of always doing more and more. The child does not slacken his effort, on the contrary, makes on effort to seek things which are more and more difficult. So the child tries to be active, and

tries to work by himself, to be independent from the adult.

The child reveals to us a law of life, so we must help the child when he shows us that he wants to do things by himself, without our help. We must certainly help him to acquire successive degrees of independence. To this end we must always have clear in our mind that he will want to work, to act without our help and alone. When we see the child taking his first steps, we know that he has to walk, we try to help him, we sustain him, we encourage him. We do everything to help him to arrive at this natural task. We do not say—"How naughty you are that you want to walk on your own feet now! Why should you walk when I have such big arms to carry you? Why should you walk with legs that sprain when you fall when I have such big legs, and can run so fast!" We think of his future and we say — "He would not be a man if he could not walk alone, by himself!"

Let us reason in the same fashion with the whole of his life. Let us say the child must acquire his independent personality through a series of personal efforts, personal exercises and experiences. We must help him to carry out those experiences. If he is going to be a man, he must be a being who must work and function for himself. Let us encourage the child to work. The child instinctively works under suitable conditions. It is our duty to prepare an environment suitable to the child, to offer him conditions in which he may exercise himself through his own experiences, to furnish him with the means of activity and to leave him to accrue his natural potential. We will then see the child seek exactness, seek minute work, which is very detailed. We will see that he repeats the exercises again and again, and that he begins to become the master of the actions which he carries out. We will see that he grows and achieves development by being active, following the laws dictated by nature.

CHAPTER 11

The idea that the child needs exercise to acquire perfection, and independence, become clear only if we think of independence in a wide unrestricted way. Helping the child to acquire independence does not mean merely to show him how to take care of his own physical needs — like washing, or combing. Independence should be understood as successive and further acquisition which has a clear form. To detach the child from us the adults, and to attach him to the environment, so that between the child and the environment there is a union because of which the child can act by himself alone — this is to facilitate independence.

A child who could walk alone, would not walk without holding on to his mother's dress. The mother wondered what she could do to make this child walk without holding her dress. Finally she put the child's own dress into his hand. The child grasped it very tightly and tried to walk by himself. When he knew that he could walk without holding on to the dress, he continued to walk alone.

Usually, the child does not remain attached to the skirts of adults, but to their advice. He cannot do anything without the adult correcting him. For instance, when he enters the house, the adult tells him — "Take off your shoes before you come into the house!." On a social occasion he is told — "When you greet a person, you must do it this way!" Usually this is followed by a correction. So the life of the child is attached, to the advice of adults.

We must have the confidence that the child knows how to act in simple situations by himself, without the help, advice or correction of adults. We must give the child, the opportunity, the possibility, of learning and exercising himself in these actions. We must think of something very simple, to detach him from our advice, and our person, and attach him to the environment in which he finds the possibilities of carrying out these actions.

The following exercise may be done as a collective exercise, as there is more pleasure in several people doing it, instead of only one. We teach the children how to walk very straight, and in perfect equilibrium. The child is called upon to pay attention to himself, to his actions and to his movements. Generally, an adult teaching the child would say — "Now be careful, put your foot like this, hold your head like this, point your feet in this direction, look where you put your feet." This is the way adults usually try to make the child pay attention to his actions. The child's attention cannot be drawn by advice, it can only be achieved by exercise.

We must draw a line on the floor, and ask the children to walk laying their feet on the line so that no part of it falls outside the line. It is a very simple method of making the child go straight. The attention of the child is centred, concentrated, upon this line. By trying to keep on the line, and maintain their equilibrium at the same time, the mode of walking becomes more perfect. It requires much more energy, much more effort, than if we were to give him directions. The exercise can be perfected by increasing the difficulty. For instance, the feet couid be placed in such a way that the toes of the back foot touch the heel of the forefoot. The muscular sense is an inner sense which guides the personality. This exercise also shapes the personality, as a perfected technique can be achieved only through severe muscular exercise. The fact that the child interests himself

in this exercise shows that the child longs to achieve higher perfection, and that he is always happy to acquire something which is difficult to acquire.

At first the attention of the child is centered upon keeping his feet on the line. The exercise can be rendered more difficult, if he is given an object to hold in a special, unchanging position in his hand — for instance, two flags, one to be held straight by each hand. If the attention is drawn away from the flag, the arm is no longer held in position. The child's attention must be drawn to the flag till the arm comes to position again. So little by little the child has to keep his attention on his feet and arms. Gradually the child acquires the ability to raise the flag while still walking. At first the exercise can be done slowly. We can ask the child asked to sing a song while walking. The exercise can also be done with glasses of water. Each glass should be filled to the brim with coloured water. The glass tumblers should be small, in proportion to the child's size. The idea is to see that the child walks on the line, but does not spill the water. If the child forgets the arm holding the glass and makes one wrong movement, the water will spill. We can ask the child to walk on the line holding a bell without making any noise, by ensuring that the tongue of the bell is still. Later, the child can be given lighted candles. Still later, the child can be asked to hold something in both his hands and on his head as well.

This exercise can be done by children from three to five years of age. They must be done in developmental succession, one following the other in difficulty. The children must be shown first to walk on line, then to walk holding a flag in one hand, then two flags. When they have acquired this perfection, not only to hold the arm straight, but to hold the body perfectly, a glass filled up to the brim can be given. First, one glass is given, and then two glasses. The holding of the bell while walking on the line is still more

difficult, because it easily makes noise. It requires a lot of control. In the case of a rope-bell, the longer the rope, the more difficult the activity.

This is an exercise in the control of the movement. It is a mental as well as a physical test. The child has to hold his body carefully and devote this attention to every little part of his body. When the exercises are perfected, the gracefulness of human movement, and the elegance of walking can be seen.

CHAPTER 12

In our schools, the children carry out different actions connected with practical, everyday life. Many opportunities for action present themselves in the environment — to greet a person in a special way, to care for our own appearance or even to wash off a spot on the table, or the floor — these are factors when living together. The children experience practical life; the actions are not taught but proved.

There are also other exercises for the analysis and control of the movement. The mere fact of having thirty or forty children in the same room, who share certain objects, poses some problems. Each child at work is using a certain object, which all the children would like to use. The only thing that the child can do is wait until the user has finished with those objects. The child has to acquire patience, and exert it when he wants something that the other children are using. We are accustomed to thinking that children will try to take from each others hands, the things which they wish to use. Usually when we buy shoes for many children, we buy the same kind of shoes for all of them. A mother who always bought things exactly alike for all her children, thought that she had solved the problem. However when she went home, each child wanted *all* the objects, and the children fought among themselves. If we consider this from the point of view of everyday experience, the problem seems without solution. Being accustomed to this

behaviour, we are sure that pandemonium will break out in our schools where there are many children, all wanting all the objects for themselves.

Surprisingly this does not happen. Instead, in this environment there is peace and quiet. When a child wants something which is being used by somebody else he patiently waits his turn. We must not think that a child who is patient, is a child who is passive. There is no sense of patient resignation in a child waiting his turn. The child enthusiasically watches what the other child is doing, how he carries out his actions. This enthusiasm seems inborn.

It is a fact that the very small children in the class arouse curiosity in the older children. Of this we possess much proof. For instance, ther is one photograph of a child about two years old drying a dish; on one side of him are two children, and on the other side are two more children, and behind him are many more children all looking down with admiring expressions on their faces, smiling with satisfaction. This admiration and interest is for the work that the small children carry out.

Another social sentiment which one sees in our schools, is the desire of young children to help. They spontaneously go to the help of others when a little mishap takes place. For example, a child was carrying a glass bowl full of water, and he slipped and bumped into something. The bowl fell to the ground, and broke into a thousand pieces, and all the water inside it spilt on the ground. Naturally, the child began to cry. The other children gathered around saying — "Oh, that happens to everybody. We can clean it up!" Then they brought another bowl to console him.

One of the rules in our schools is that when one has finished working, all the objects used must be placed back in their original positions, in their original places. Sometimes an exercise requires a great deal of material and is spread

around, and to put them back in their place takes a great deal of time. Many times, the child who has many objects to put away is helped by other children who say — "Oh the poor child, how many things he has got! It will take him a long time to put them back, let us help him!" The curious fact is that the children go to the aid of others only when there is a real need for help, for instance, when something has fallen down and broken, or when there are too many objects to be put away and there is only a little time in which to do it. They never help another child when he is making a constructive effort to do things for himself. As if by instinct, they have it in themselves never to give what we call useless help. Thus, spontaneously social sentiments come forth; real life is found in this environment, a life which evolves peacefully, in which each child goes onto his own objects. The social sentiments are born from the fact, that each child is allowed by circumstances to carry out thse actions with exactitude and to repeat them as often as he pleases. This is the simple secret, one might say, underlying the beautiful functioning of the small society — each child is acting; each child is occuped. It is this capacity of the child to do something useful, which we call enthusiasm. The child's satisfaction is not in his freedom or in his independence or in his mastery in the environment; his satisfaction lies in being able to do something.

There was a very, very beautiful school in a European city; a school which had been built for children. There was a beautiful environment, in beautiful colours, in which there were all the means to carry out the exercises of practical life. The house had been built to the proportion of the children. The doors, the kitchen and the objects used in the kitchen were small and perfectly prepared for the children. A mother told me that her child, who followed her when walking to the school, always ran ahead of her when they were near the school, in order to get to the front door before

her; he did this every day. She thought that the child was so enthusiastic to go to school, that when he came near the school he started to run to get there quickly. This seemed of course, quite natural and logical, because the school was a beautiful home for children. However we wanted to investigate the matter furrher, to find out what exactly attracted the child so much that he would run to get to the school in the morning. One night, the child was asked the question. This was his answer—"If I do not run faster than mother, *she* would be the one to ring the bell at the door. *I* want to ring the bell at the door!" That was the cause! He, by his action, caused the door to be opened, and that he liked.

It is interesting to see the child persist with exactitude in his actions. How he likes to repeat, and to feel the same impression, the same sensation! For instance, this child, every morning, repeated the same thing on nearing the school. The same thing happens inside the school. Once the door opens and the child comes inside, he likes to do the same things, repeat the same actions with the same exactness. By repeating these actions, by repeating the use of the material for the exercises of practical life, or the Montessori apparatus, the child achieves perfection. Not only does he become more perfect in his movement, but he achieves, one might say, development. It is not merely a question of being able to move with more ease or with more grace, it is the growing, a perfecting of the whole, a feeling of satisfaction, a feeling of independence, a feeling of happiness of being there to move; in other words it is the development that takes place. Every action becomes an action of perfecting oneself.

When we adults put to ourselves the problem of bettering ourselves or becoming more perfect, at what conslusion do we arrive? We come to this conclusion that every action of life, even the most simple, must be to us a means of becoming more perfect. We pass this off as a very superior

theory, the first stage on the path to perfection. Instead of carrying out the natural everyday actions of life, without thinking, or in an imperfect way, we believe that to do them attentively, conscientiously, carefully and as perfectly as possible, is the first step towards achieving perfection. This is one of the paths, there are many of them. We have to do these things because we have to do them, and we do them as they come. We must use everything, so that we accomplish everything. To become more conscientious, that is the way of perfection; the more ideas, the more actions we carry out, the more we begin mastering, the more perfect we become. This is the orientation towards perfection.

If we do not think in this way, another inner orientation arises in us. We think — " It is so boring to do that! Oh, let him do it for me!" Little by little everything becomes boring, and we try to get as many people as possible to do things, so that we need do little or nothing for ourselves. We say — "Will you wake me up tomorrow morning at such and such an hour?" Or we say — " Will you bring me coffee tomorrow?" (We never say — "Will you drink my coffee for me?" Oh no, not that!) Little by little we become more and more passive. It never occurs to us that we should help others. It seems quite natural that everybody should help us. We look for people to do things for us. The more people we have to do things for us, the happier is our life. This is the consequence of this other orientation of life.

There is another kind of psychological construction, a characteristic seen in some of us. When we have several objects of our own we do not want anybody to touch them or change their place. Some friend comes up and asks — "Will you lend me that object? You are not using it." We say — "No, no, just leave that alone, because after all, it belongs to me." There is a feeling of possession, and of exclusivity. Suppose we had a big house, with fifty

rooms in it, the same thing happens when somebody asks us — " What will you do with all these rooms, give me one of them." When we wonder what we are going to do, or how we are going to spend the day, we look for some interesting friend to keep us company. We search for something to keep us occupied. We seek something to fill up our empty life.

The path of perfection is the one in which every action that we do in our life, we think about, and carry out as a means to perfection. This is the child's natural expression of life, his way of acting and living. The child buttons his dress, in order to button the dress by himself. The buttoning of the dress is the means to his own self-perfection. That is why as soon as he buttons, he unbuttons and buttons again. If he is to clean an object, he does it over and over again. So every action of the child is a move towards self-perfection and self-development. What is so striking is that the path of perfection, something so extraordinary and so very difficult for us, is just the natural way of the child. If we begin to look into the child, we see that by every action that the child carries out, he tries to grow more perfect.

One of the things which impressed me most, and has caused the most surprise, is the act of eating. Children do not eat in order to satisfy their appetite. By eating, they become more perfect. Is this not curious? It goes beyond everyone's belief and experience! However, it has been clearly observed in our schools. Normally, if we are hungry, we wish to eat; eating is attractive. So if we were served soup, we would eat it at once. Some children were seated at the dining table to eat, and other children were serving them. An older child was watching a younger child seated next to him. The small one had to tie a bib around his neck so that he might not get his clothes dirty. The older child was completely taken up by this, and began to tie the bib. He took a long time doing it. Sometimes he did not

succeed in making the bow, and he started all over again. Both the children remained seated in front of the soup, which was getting cold, but both were interested in actions evidently more attractive than the soup itself. The children wanted everything in order before they ate.

Here is another example. One of the children seated at the table looked very, very sad. When he was asked why he was sad, he said — " Today they told me to eat!" The child wanted to serve the soup; something that needed an effort, something which lead him to improve himself. The child was conscious of it. He felt within himself a great urge towards perfection.

A lady, who had heard about the strange children who looked upon their food as a secondary thing wished to see the phenomenon with her own eyes. The lady sat on one side of the room and two or three children who had been missing from the class came round to her and showed her their hands. Now these children were very poor, and this lady was rich. She was shocked, and told the children that it was a very very bad habit to beg. These children were late because they had gone to wash their hands before their meal! They were hungry, yet instead of running down to eat, they thought of cleaning their hands. Seeing a guest they went to show her their hands while their soup was getting cold. One can see here an upliftment, an ascension; something superior that has been awakened in the child.

This urge towards upliftment, this urge for perfection can be seen in the child in many forms. All these sentiments of a higher nature, manifest themselves in the child when he has at his disposal an environment which helps his development. The basis of everything then is to become interested in an action, to carry it out, and to accomplish it to perfection. Always remember the child who ran ahead of his mother to ring the bell. The path of perfection is

not achieved by very lofty thought, or by very high sentiment but through humble action, small things, done conscientiously to perfection. The child is a master of himself, because he carries out his simple, happy and enthusiastic life in the path of perfection.

CHAPTER 13

A great deal has been said about a lesson we use in our method which is well-known wherever our method is well-known. This lesson has even been taken outside our method. It is a collective lesson, and like walking upon the line, it is based upon the control of movements. Sometimes in walking upon the line, one or two people participate, then more people join in. Although it is a collective activity sometimes only very few participate while the others look on. Although it is a collective lesson, it is not a totalitarian lesson. The lesson of which I am about to talk today we call the silence lesson; it is a totalitarian lesson, in the sense, that it requires every member of the class to take part.

You might ask — "Where is the freedom in this? Where is the individual education?" If we have a set idea of what freedom is and what freedom must be, we end by becoming slaves of our idea of freedom. Instead, by living with the children and by observing their expressions of life, we must learn for ourselves what freedom really is. If we leave children free, we can observe what they do when they are free, and we can follow with them a certain law,by following which they come together. Freedom is thus to become free of certain ties that we have with certain things that restrict us. When we know what freedom is, we learn to accept a new idea freely.

I should like to tell you how this silence lesson came

about. I had never stopped to think about the fact that a baby makes less noise than an older child. His organs are not as developed. His voice is small and finer. His breathing is more silent. He takes in and releases less air because his lungs are smaller. Once a baby was given to me for a moment by his mother, wrapped, in something children used to wear at that time. It was very impressive, the silence of that little creature. I was amongst forty small children that day, and I said to them — " Look at this child, ho still he is. He is more still than all of us." To my great surprise, the children became silent. They looked at the baby in my arms, and seemed to meditate upon this fact. They tried to be as still as him. This interested me. The baby's legs were tied up in the wrapper. In order to make the children laugh, jokingly I said — "Can you keep your legs as still as this little one?" The children did not laugh, but instead became even more thoughtful. Then all of them put their legs together, joined their feet, and tried to be as still as possible. I tried again — " All right, you can keep your legs still, but you cannot breathe as silently as this child." The children then seriously and intently tried to keep their breath back, to be as silent as possible. Surprised, I watched for a minute. A quiet calm enveloped us, and there was a silence such as we had never had before. I had never dreamt that children could become so interested in silence. This is how the silence lesson originated.

In order to attain control over the body, we look for a precise factor; the silence is this factor. It is an indicative factor which concerns the sense of hearing; it is indicative because there is no impression of sound. In order to find this silence, in order to attain it, we have to keep ourselves completely still and without movement. It means the total control of all movements. It is different from being told — " Be silent! Be still! " It is not merely a question of not talking, it is a question of controlling every movement

of the body, even breath. It is research, a seeking out of the elimination of all voice, which requires the accord of all, because if even one person makes noise, the silence is no longer perfect. It is upto the children not to make any noise. Therefore, in order in carry out a silence lesson, it is essential to obtain the consent of each child. This is of fundamental importance. One sees, that all individual education is but an inner functioning of the will, to be conscious of what is asked; to say yes because we accept, and want to do it. It appears to be a small thing but it is the basis of successful education.

Once when I wanted to give the silence lesson, I said to the children — " Would you like to make silence? " The children agreed. I was not content with this assent, so I went round to each child separately and asked — " Do you really want to do it?" When each one of them had given this consent, I said — " All right, let us make silence. Each one of you must be absolutely still. You must be careful not to move your hands, not to move your feet, not to move at all." This was so interesting that the children were happy to try it. I could see their souls shining out of their eyes during the exercise. This silence was revealing in itself. In a city which is full of machines in the streets, silence is never heard. In the country side teeming with shrieking life too, silence is unknown. During the silence the usual noises were not heard. So a distinction was possible between the sounds that were made by us, and the sounds which came from outside. We began to hear very fine sounds, we could hear a small insect making a noise, we could hear a bird crying in the distance. After a while we could hear the tick-tock of the clock. It was as though a new world which had not existed before had come to life.

We have had schools (the schools are usually noisy) with two hundred and fifty children in one class who all of a sudden kept silent. When there is consent, when there is

accord, there is no noise. The consent may be among three hundred people or it might be among three thousand or more, yet the silence would be no greater. The silence is the material result of this accord.

At this time I was interested in the working mechanism of the human ear. We sought to find out how acute the hearing of our patient was, and different techniques were used to do this. In one of the experiments a watch was placed at a certain distance from the ear of the patient. In another experiment we tested the patient's acuteness of the hearing by calling to him in an aphonic voice. If the individual did not look at me when I called him in this manner, his hearing was bad. If he heard me without seeing the movements of my lips, his hearing was quite good.

So I made this addition to the silent lesson. I said to the children — " Now go into the next room, and stay there without making noise. I will call each one of you by name. When you hear your name called, get up without making any noise and come to me without disturbing any one in the room." In the ensuing silence I began to call them one by one, by name. I could see one child I called, get up with a shining face and walk slowly towards me very very carefully without making any noise. When she reached me, she said — " I succeeded ! I came without making noise! " Then I called another child who came to me, making the same effort, taking the same care, not to break the silence of the community. I gave each of tkem a candy, as a prize for the victory achieved in coming without making a noise. The children did not want these sweets! Something precious had arisen, something which lingered. They arranged themselves around me and kept the silence. After calling few of the childrens, names I thought that for such small children this lesson might be too much, so I said — " Let us stop here." The poor children who were still waiting to be called were very sad, and said — " Why don't you call us? " Then

I understood that it was necessary to call each one of them, because each one of them was waiting for the call that came in the silence.

I was once in New York, and I went to visit one of our schools. One of the teachers asked me — "Would you like to see the silence lesson? It comes off well. I do not speak, I merely write the word *silence* on the blackboard, and silence falls." I was eager to observe this. We went to the classroom where the children were working. By the time the teacher wrote the first two letters *s* and *i* on the blackboard silence came over the room. It was a mere indication, yet it was sufficient to draw the silence from the children. So much was the silence sought and appreciated! It shows the need of the human soul to become detached from the outer world; this real need is revealed in the child. The voice that comes out of the dark, out of this silence calls the soul. The silence offers the soul something which fulfils a spiritual need.

At first, this interesting phenomenon caused a great deal of talk. Many attacked our method. They accused me of trying to hypnotise the children, of imposing my will upon them. I was depicted as a magician whose personality had a special fascination for little children. However gradually every one saw that the silence was not born from my person, but because it was what the children were seeking.

Later, what a great success this silence lesson enjoyed! It was repeated on all sides. At that time it was a common idea that it was not possible for children to be silent. So it was interesting that the children liked it so much. So many people tried it. They tried it even in schools that had nothing to do with me and my method. They saw that the children were calmer when the silence lesson was taught. Why was this so?

In the common school the teacher aims to have this

silence. One of the teacher's problems is that she does not have it. In order to achieve this silence, the teacher begins by making a noise usually by banging the table, and by shouting in a voice raised above all the other voices in the class — "Children, be silent!" If the children learn by imitation, it is the instinct of the child to imitate, all this noise should excite them to move about and to make more noise. The teacher orders the children to put their arms on their desks in a special way, so that all the arms can be seen, and to keep their feet together. She knows that in order to have silence, she has to obtain lack of motion. The childrens reaction is to kick out in relief when the teacher looks away. The reaction to the teacher's order is rebellion. What is the aim of the teacher? It is to make the children as silent as possible. In other words, the silence is connected with the teacher who orders the children to be quiet and still. It is the teacher who holds, who keeps discipline. If the teacher leaves the room, there is a terrible row. The children shriek and run about. This is because discipline is tied to an external individual, to the adult. In the silence lesson, the children do not keep silent because someone has commanded them to be silent, but because they have consented to be silent; because they *want* to be silent; because they need to be silent.

Once the children had participated in the silence lesson, it was seen that they instinctively tried to carry out their actions in silence. When they ran, they tried to run on tiptoe. They tried to avoid obstacles. They tried not to bump against chairs. They tried to put down objects delicately. They became more kind. They felt the unkindness of a noise which can be avoided.

The purpose of the silence lesson is not that the children should do everything in silence. However, little by little, the children became more careful in their movements. When the teacher went out of the class, they all remained quiet

and silent. They moved about, taking the objects they needed in silence. When they left the class, they left quietly, without noisy and disorderly movement. Spontaneous discipline arose in the children, who began to appreciate the refinement of controlled movement and the unkindness of useless noise; each one becoming conscious of this discipline.

Silence cannot be turned on at the touch of a button, like an electric light. It is necessary to understand this clearly, because many crimes have been committed in the name of Montessori. Some teachers say to the children — " Remember, you are Montessori children. When you take these things, do not make noise! " Thereafter whenever any noise is heard the teacher rises, her expression changes, often her eyes pop out in anger. These children before doing anything, look at the teacher's threatening eyes or at the smile on her face as a guide. There is a total silence in these classes, as the teachers are there to keep the children still. At all times the children are tense, and often immobile. When we enter such a class, we see that the children do not look at you or greet you. The teacher is proud and says — " Look, the children are so engrossed in their work that they do not notice your arrival."

However at times there is an explosion of enthusiasm and affection. Once the Queen of Italy came to visit one of our schools. The Queen was interested in seeing the things the children had done. The children were not content with showing their work to her, but wished to send their greetings, and the things to the Princess, a neice of the Queen, a child of eight years. A noisy scene unfolded. So in the life of the child there are many situations which are not silent at all.

One must understand therefore, that silence and discipline are the spontaneous creations of the child. A class may be noisy, but calm may come one day, development

will arrive; but in the school where discipline is frozen, there is no hope of development. When the children act spontaneously, they do not always remain still and silent like this. They can do it for a minute, as an exercise. They run about the room, doing their activities contentedly, and little noises that the children make when they walk or run can be heard. It is like the buzzing of bees hovering around their bee-hive.

The silence discipline is connected with the child's own soul and not with the will of an outside person. If we infuse the spirit of silence into the child's environment, it renders a discipline independent of the teacher. The discipline, the silence, the calm, all become free expression. The flowering of discipline is thus the result of growth; it is a spiritual development.

CHAPTER 14

The child shows to us certain constant characteristics which are yet not common in every one. When we say that these characteristics of children are constant and common not to one or two of these children but to all children, it surprises us because while they should be seen commonly, they are not so seen. What are we to understand from this? These characteristics are revealed by all children only when certain conditions are made available to them.

This fact has been recognised in the physical field. If children are brought up scientifically, in such a way that they have their natural food from the mother regularly, they are defended against infections diseases. If all the conditions favourable to their lives is given to them, then all children show the same development. Only if these constant characteristics came about, could the children be said to be brought up in good conditions. It is evident that the children will not all be alike, that they will differ from one another not only naturally, individually, but also according to the races to which they belong. However each one for his own country, for his own race, will be a healthy, beautiful child. The law is the same for all. All children grow in a physical environment suited to them, all of them have certain needs and are governed by certain laws. A physical environment must be prepared for the children, a physical environment which fulfils the needs of all children, of all races. We do not say, certain children must be fed well, or that certain

children must be cleaned. We say all children must be clean and well fed. Only if this is true can we say that these children, no matter to what country they belong, will grow healthy and beautiful.

Not so long ago, there was a widespread idea that some children were hunchbacked, some were bowlegged, some were blind, some were too fat; there seemed to be no ordinary children. People believed that in humanity, such as it is, there occurred this or that type of child; all were different, some were lucky, some were not, some were born with crooked legs, some with straight. However it is not true that a certain segment of humanity must be distorted; that some children must be born bowlegged, that some children must be born blind. Every one could be healthy. These defects in certain human beings are due to deviations from natural conditions, conditions which retard normal development. If certain general conditions are met then all children could be healthy, all could be straight, and nobody would believe that unhealthy children existed.

When we look at old, religious paintings we see little children painted as angels. We say that such children live only in the imagination of the painter; that he has idealised reality in his imagination. When we look at Greek statues, we say, this is an idealised humanity which does not exist. It is only artistic inspiration; it exists only in the hearts of sculptors. Yet today when a man leads an active life, he reaches a certain type of body and strength very similar to that of a Greek statue. Today we find a more healthy type of child developing. This is because he grows in better conditions than those found before. When we try to find out what has been done in order to attain this healthy and beautiful yong being, we find that certain conditions necessary to his life have been met.

Earlier there was an idea that to have as much food as

one possibly could was the height of happiness. So the child who had a mother endowed with a great quantity of milk, who understood the happiness of her child in this fashion, was fed every time he opened his mouth to cry. So a great number of illnesses during infancy were due to the irregularity of intake and to the incorrect quantity of milk given. Every time the child cried the mother, in order to console him, fed him. The instinct of the child given to him by nature is to suck. What do you suppose would happen if the poor child had eaten too much and was crying for pain, and the mother fed him again? If the mother did this whenever the child cried, he would die of overfeeding! Only when it was scientifically demonstrated that a great number of deaths of infants was caused by this bad treatment, and it was discovered that it was not the happiness of the child, but his good health which mattered, that a timetable for feeding and a regulation of intake were necessary, was this idea completely accepted. Mothers were taught how to feed the children, how much to give the child at each meal; they became very careful about the hour, and the way in which they fed the baby.

It was said that when the child cried, he developed the power of his lungs. At the time when this idea was prevalent, a great many cases of tuberculosis and many lung diseases were also prevalent among these undeveloped children, even though they cried and cried! So it was not the crying that made their lungs strong.

Why did the cild stop crying? It was because he had stopped suffering. This answers the eternal question of mothers — " What must I do when the child cries? " This is not incredible. After all the child expresses himself by crying. So the natural truth came to our knowledge that if the child cried, there was some reason for it; that it necessary to interpret his weeping.

I was a doctor then, I remember entering the rooms where

there were thirty or forty new-borns, exclaiming — "It is true! These cots are full, but the children sleep quietly without crying!" We would tell visitors — "You must come at this hour because when that hour is reached the children cry!" Almost to the minute, one little voice would start and then another. As the children woke up, each one raised his voice to be heard, to call for food.

So also other prejudices were destroyed. Now no one believes that a child's illnesses are unavoidable and everybody knows that it is not necessary for the child to cry in order to develop his lungs. Given some necessary conditions he can defend himself from disease and grow without physical suffering, to be strong and healthy. Such conditions can be found to suit all children. Therefore, in the field of physical science we say the child is much stronger and more beautiful, than was conceived possible in the past.

If we apply these ideas to the spiritual life of the child, we arrive at the conclusion that certain conditions have to be met for the development of psychical life. Given these conditions of development we shall certainly have children who are different from the old conception of childhood. By offering the child conditions necessary to psychic development we shall see certain characteristics of the normal, well-developed child, common to all children of all races; characterics which are at the basis of all human construction.

It is surprising to see what makes for the happiness and health of the child. We must give the child, all the help he requires, but that which is most noxious to psychic life is the excess of help. When the mother feeds the child too much, he cries. On the physical side too much to eat and on the spiritual side too much of help, both can be harmful. We must consider to what extent the child needs help. There is a limit. We must help the child up to that point and not more. To help the child when he does not need it by stopp-

ing him from being active means stopping the child from achieving development. When given the right conditions necessary to the development of his normal life, the child's defects, his disobedience, his stubbornness disappear. The child becomes less demanding on the mother and a beautiful, marvellous creature begins to arise in him. This calm child becomes active and is able to do things by himself without help. If the concepts of phsychical hygiene were to spread all over the world, just as the concepts of physical hygiene have done, a stronger, more beautiful humanity would emerge. The defects, seen not in one group of children, but among childen all over the world would vanish.

It is certain that all the individuals are different from each other; there are racial differences, and individual differences, very great ones. No matter what their differences, no matter what they will be doing in the world, it is certain that all of them will be in need of certain conditions in order to be healthy. No matter what the destiny or the strength of the individual he will be better constituted to reach his destiny if he is healthy and strong.

We must remember that these children are our responsibility; it is our duty to give the children the conditions to grow strong and healthy both in the physical and in the psychical field, so that he may achieve his purpose.

CHAPTER 15

Everyone has observed that the senses of the child are attracted by the environment. He is attracted by everything that touches his senses — brilliant colours, the sounds he can hear, and everything that he can touch. At this age the child moves continously, so besides being the sensorial age, this is also termed the motor age, the age of movement. Therefore there is no doubt that the child needs to come into contact with his environment, to penetrate into his environment, both by means of his senses and by means of his movement. The child thus focusses his intelligence upon reality in order to grasp it, in order that his senses are active with it.

Sensorial materials are the means by which we help children of this age. This material aids the education of the senses. The material lends itself to activity and movement. At the same time it calls forth the superior mental power of the child. It calls forth the child's concentration, deep attention, and also his reasoning power.

We all know that we have five senses that are the officially recognised as such — the sense of hearing, the sense of taste, the sense of smell, the sense of touch and the sense of sight. This classification may be termed the terminology of organs as we have ears, tongue, nose and so forth. The child's contact with the external world is generally considered from the mechanical point of view that an object, an external stimulus affects the child. However, if one considers the question well, we see that it is the child who

goes to seek out these sensations. We see that the child takes in the external world by means of his senses in the same way we pick up an object with our hands. We see the child grasping only language despite all the stimuli in his environment. So the intelligence of the child is not without discrimination among the hoards of stimuli all around him. Thus the child interacts with his environment, which serves to construct his intelligence.

By means of sight, we can take in the sensation of colour. These special sensations of sight have been grouped under what is called the chromatic sense. This sense is relative, because it is only capable of grasping certain kind of colours. It is interesting that nature itself limits the quality of sensations that we can take from the environment. Man has eyes, the sunlight produces different rays, which produce the sensation of different colors; but to man it is permitted to see only a part of all the sensations of colours that are produced.

The same can be said of sound. Only a part of all the sounds produced can be taken in by the sense of hearing. It is difficult to explain but very simply if all the colours we perceive can be measured by one octave, the sounds we hear would measure six octaves, six times as much as colour. Nevertheless, it is limited. Man is placed in relation to the external world within certain limits.

Another group of visual sensations is that of form, and yet another group is that of dimension, which is in a way part of form. We perceive differences in dimensions and form in objects which are smaller or bigger or different in form. Thus when we talk about visual sensations, we talk about many different things. They can be subdivided into three parts, the chromatic group, the dimensions group and the form group.

Another of the important senses is that of touch, the

sensation that one receives when one comes into contact with an object. Certain parts of the skin, for instance the finger tips, are very sensitive to touch. There is a very clear distinction between the sense of touch and the sense of pressure, according to the degree of pressure behind the movement. If some one gave you a slap, that is a sensation of contact but not of touch. Even by just lightly rubbing my finger tips upon the fingers of my left hand, I have a sensation of pressure, of weight. By means of the skin we can also distinguish other sensations, like the sensation of warmth. Studied through different nervous terminals in the skin, each of these sensations are a part of different groups. The sense of touch is called the tactile sense, and the faculty by which we distinguish pressure from touch is called the baric sense. The faculty by which we distinguish differences in temperature is call d the thermic sense.

There is yet another group of sensations by which blind people, who do not open their eyes to see, recognise things. This sense of the blind is so developed that it almost substitutes the sense of sight. They can tell an apple from a glass-stopper. They can even recognise a person by touching his face. What is this sense? It is not the sense of touch, it is not the sense of pressure, it is different from all these. It is in fact the combination of the tactile sense and the muscular sense of the body. It also combines the sense of movement. If we take a rod and feel along its whole length with our hands two or three times, we feel the extent of its length so well that we can memorise it and reproduce the length with eyes closed. Equilibrium itself is one form of the muscular sense. If we did not possess the muscular sense, we would not only be unable to carry out our movements, but would also be unable to make new movements. All the new movements which man is capable of making is related to muscular sensation.

When we hold two objects in our hands, the mere sense

of touch tells us nothing. We recognise the difference in their sizes by the different movements which are necessary for our hands to go around each object. It is only when we have completed these movements that we are able to recognise the objects. This combination of senses is called the stereognostic sense.

The senses are the means by which our intelligence comes into possession of the environment, by which the intelligence is built up. The ideas which form the intelligence of man seem to be in reality based upon the sensations taken from the environment. The ancient people recognised this when they said there is nothing in the intelligence which is not based on the senses. These senses are the doors through which the sensations pass to the intelligence. It is important to understand, that by the same token, the senses are the means by which relations between the intelligence and the exterior world are limited. There is something in the power of man which is limited, which enables him to take in the sensations given by the exterior world. These limits represent the limits of activity in relation to reality.

The groups which are constituted by the sense of smell and the sense of taste are placed in relation to the physiological working of the vegetative body. Feeding above all is related to these two groups. A certain defence from the dangers in the environment, against sicknesses or against threat to our life, exists. Anything that is unpleasant to the nose is immediately smelt — for instance, fire which means danger to life, or the smell of impure air when we come into a room where a great many people have been before. It is a warning from the sense of smell, in defence of our physiological body. That is why these senses which are for the maintenance of the physical boys, have not been considered among those, which lead to the construction and organisation of the intelligence.

We all like to eat. If we think about it the only essen-

tial tools we need in order to eat are the teeth which reduce the food to a state fit for eating. To feel exhausted would be a sufficient warning to the brain of the need of food for the body. It would send us in search of food. The sense of smell and taste represent the many pains nature has taken to make us enjoy what we eat as much as possible. It would be much easier to do without food it one did not have the sensation of good taste. Not only is there huner, but also the nice sensations of taste which invite us to eat. Other wise it would be sufficient to take that which we are offered, throw it in our mouths and chew, like the cows which are always eating grass. Instead how many refinements we use in producing food! How many spices, how many foodstuffs, how many men and women in the world are occupied in producing foods which will satisfy these tastes! How many sweet makers there are in the world!

If the same refinements were recognised for intellectual needs, how many more teachers there would be, and how many more people would have to run around the world in search of things which would satisfy the hungry intelligence! Instead, the intelligence is left to starve, but not so the human body, which seeks food to satisfy its growing needs and refinement of taste. We may say however, that taste is also an intellectual sense, because it makes the intelligence work to satisfy the sensations of taste! Its place is not the mouth! After all, our poor mouth can only feel four sensations of taste — sweet, bitter, salty and sour. We eliminate the bitter taste as carefully as we can in our food, so there are only three taste sensations for which there is so much work all over the world!

The tongue, another organ which comes into the mechanism as an accomplice, plays only a secondary part. Its work, is to act as a passage for the food. The sense which is truly behind the satisfaction we find in food is the sense of smell. We enjoy our food all the more because of the fine

smells we like. The nose reminds us of the appetite. We smell food and say — "What nice food!" The nose controls the air we breathe, because air has to pass through our nose. Scents, perfumed soaps, powders and lipsticks — the nose seeks all kinds of refinements! The Western people came to India to seek spices. How poetical it is that the first contact between the occiental and oriental people was over perfume!

If the human intelligence were as developed as the sense of smell or the sense of taste, how many more intellectual relations there would be between men today. But this intelligence is asleep. An Indian who comes to Paris may say — "I have a beautiful poem!" The Parisian gentleman would say — "Good, read it to somebody else!" On the contrary all would be awake, and interested, if someone were to say — "There is a new ice cream from America!"

There are so many senses which we have enumerated, yet they do not serve but as limitations for the intellect. How little their correspondence to humanity! How necessary it is to urge this humanity which is asleep, to wake up; not to give less nose to humanity, but to give more to the intelligence!

CHAPTER 16

Objects presented to children two and a half to three years of age, must correspond to the child's need for the organisation of co-ordinated movement by the repetition of the exercise, in such a fashion that the children will start looking for other objects which will allow for the same. Children arrive at complex, yet useful actions in practical life, for example laying the table in the European fashion placing the dishes at a certain distance, placing certain spoons and forks on the right and certain others on the left. These useful actions which are of real value also satisfy the child's need for repetition. Adults can help the child by preparing his environment with objects which correspond to his needs and tendencies.

These cylinders[1] have each got a corresponding cavity in which they fit exactly. The exercise is to put the cylinders back into place in their cavities. It is not a mechanical exercise — it needs very special attention. If the cylinders are placed in the wrong cavities we will be left with a few

1. Today these objects are referred to as Cylinder Blocks. There are four blocks in all. Each block holds ten cylinders in their respective sockets. In block A the cylinders differ successively, in height. In block B the cylinders differ successively in diameter. In block C the cylinders differ successively in height and diameter in descending order. The last block C1 is a variation of Block C and the cylinders vary successively in height and diameter in an ascending order. In each block the difference in dimension, is uniformly 0.5 cms., the largest cylinder is 5.5 cms and the smallest is 1 cm.

cylinders which will certainly not enter any remaining cavity. This presents a problem to solve. We must do the exercise again. At the start, each cylinder had its own place, so we must be able to find a place for each one of them at the end of the activity. So not only are the cylinders involved in this exercise, but also the reasoning.

It is evident that every individual has his own way of reasoning. In order to bring out individuality, we must have identical objects upon which each individual works. This is how we can see if one person is quicker than the other in carrying out the exercise. This is why we give all children all these exercises, because by working with the same objects all the differences will stand out. This material is very old, yet it is still in use today in the field of experimental psychology. This exercise forms one of the classical tests of psychology. In Europe, these objects are used by adults in centres of professional orientation, in order to see how quick they are to notice certain differences. One person may put the cylinders in place without a single error while another one may make a mistake leaving one cylinder out, having to do the exercise all over again. These exercises have no value unless they are timed. We can say that one individual takes a minute to put all the cylinders in place while another takes a minute and a half. We can measure the difference between the two people. The exercise becomes the instrument of measure, an instrument of assembling the possibilities, the faculties of individuals.

When we offer this exercise to a child between two and a half and three year of age, our purpose is not to measure his intelligence, but to offer him a means of development. When the child repeats this exercise he develops the capacity to recognise small differences among objects. This corresponds to one of the child's formative needs, because he has naturally the tendency of interesting himself in exact things in an exact way. However, it is not a reasoning power that

makes the child do this exercise, it seems almost an instinct,. If one cylinder remains out of place he takes them all out the repeats the exercise. This material seem to draw out a special power of concentration which no one had previously supposed possible in a child.

It was a three year old child doing this exercise with great concern and attention who first helped me understand the child's capacity for mental concentration. Sometimes the child did the exercise correctly. Nevertheless, she repeated the exercise all over again. When I noticed this it struck me as extraordinary. After watching the child doing the exercise for some time, it occurred to me to count the repetitions. Then in order to distract the child. I made a noise, but she continued to repeat the exercise. I then peered over her shoulder so that she would be distracted by my presence, but the child continued her repetitions. Then I told the other children (about forty of them) in the room, to sing around me to see if she would look up and pay attention to the song, but the child did not look up. She continued to carry out the exercise. Then I picked up the child and carried her to the table, she began to do the same exercise there also. I found I could do nothing but wait. From the moment that I started to count, the child repeated the exercise forty-two times in succession. She then stopped and looked around with a smile on her face, as if to say — " Look how different the world is, much more beautiful now! " She had worked so hard, yet she looked so rested. Why she did stop just then and not before? Why was it impossible to make her stop earlier? Why do children carry out much more work than is necessary?

Sometimes work can be fatiguing; it can diminish our strength. However, it is not always necessary that work should end in fatigue. There is a form of work which brings rest in its wake. Perhaps some activities which look like hard work are necessary for the development of the child's psychic life.

Whenever the child concentrates all his energies on work, this work rests him instead of fatiguing him. When we eat, when we move our jaws, we repeat the same movement over and over. We concentrate on our meal. We look forward to eating. If some one interrupts we say — " Oh, let him wait because what I am doing is very important!" No one says — " Oh how much work my jaws do, how my throat pains! " No one feels fatigued by eating. If the work brings rest instead of fatigue, we must conclude that we can always work! It would be difficult to arrive at this conclusion through reasoning, but we can arrive at it by watching children.

In our schools children work continuously without becoming fatigued. For children whose parents went to work we had school from nine o'clock in the morning till six o'clock in the evening. When these children went home, they were bored. Their mothers came to us and said — "Give us something to keep the children engaged, they keep asking for something to do!" Some mothers told me that the children washed their hands again and again. The washing was for them work and pleasure at the same time. Once a mother came to us when her child was ill, and said — "My child does not seem to be worried, but she asked for something to do during the day! "

The children's love for work is a fact. In order that the child may work, in order that the child may move freely the conditions must ensure that he is not forced. When he has time at his disposal, he can choose to act, he can do more in such freedom than when he is forced to do anything. All life is movement. The organ which maintains our physiological life is the continuously beating heart. We do not say — " Poor heart! It is overworked! Let the poor thing rest for a little time! " The same is true of the intelligence of man. The mind of man is always in need of activity. It is only during sleep, sometimes, that the mind

of man rests. Dreams show that even while asleep the mind goes on working continuously. This mind should be used to bring man into contact with the exterior world. The child needs to fix his attention on something exterior from him, which calls forth his concentration, and requires from him a certain amount of movement. One never sees a small child admiring beauties of nature. The child has the tendency to work, to concentrate while working with an object.

All physical bodies have got three dimensions, but they may differ from the other objects only in one or the other of the dimensions, or they may differ in all the three dimensions. This is a scientific fact. How do all people differ from each other? There may be people who are about the same stoutness, but one may be tall and the other short and this is the difference. We say—"Look at that man! How tall he is! Look how short that man is!" There may be people who are more or less the same height but one maybe fat and big and the other nice and slender. This is nature. When we see a mother and her little child we can say that the child is smaller than the mother. We can see that people can differ from each other in one or all dimensions. So children led by their needs are active around these objects[1] which are not given to the children by chance but because they hold in them a teaching property.

To place the cubes of the Pink Tower one on the top of the other, there is a need for co-ordination of movement.

1. There are three series of objects called the Pink Tower, the Broad Stair and the Long Stair. Each series is made up of ten objects. In the Long Stair the ten prisms have equal sections and equal thickness. All features are alike, except the length. The difference in length is always 10 cms. In the Broad Stair the ten prisms are all of the same length, but they have different thicknesses. Each square cross section differs by 1 cm. The Pink Tower cubes range from 1 cc to 10 cc. So in the Long Stair the objects differ only in one dimension, length. In the Broad Stair the objects differ in two dimensions. In the Pink Tower the objects differ in all three dimensions.

It is necessary to pay great attention to the arm. It is very difficult. The arm must be very firm and the movement exact. The lighter or smaller the object, the more difficult it is to place in position, in the centre of the previous one. If the object is heavy, it helps to keep the hand steady.

Sometimes when the child is trying to place the cube the child's hand trembles. This tremor makes it very difficult to build the tower. In the field of medicine, it is called the intentional tremor. It occurs only when one is trying hard, when there is an intent to do work. It usually means that the organs are in need of attention. The building of the Pink Tower can be used as a strengthening exercise. It helps to build up that power which will obey the individual's intention exactly.

All those who see children carrying out work, see that they are interested in what they do and amuse themselves very much. Certainly work is pleasure, there is no doubt about that. Therefore it does not represent fatigue or difficulty. While working, the child is constructing his own personality. It is evident that he needs to work because he throws himself upon it with pleasure.

Humanity has a great many wrong ideas about work and rest, about work and liberty. Every adult asks for less work to do. The greatest social movements have as a base, the diminishing of working hours for working people. Every where, it is considered that an exquisite hand which does no work is noble. The rich work at rendering their hands more beautiful and more delicate, the skin soft, the nails all shining. In Italy, ladies would never dream of going out without their gloves to protect their hands from the air which might spoil them if they were exposed. How much care and attention the hands require! Instead of losing time in doing the work themselves they call someone and say— "Here are my hands, render them soft and beautiful!" It is evident that in these conceptions some error exists.

Freedom and work are problems which find no solutions if considered only in the adult world without the help and delight which the child can give. It is in the nature of man to be active, to work, but it is also true that he must work in a special fashion as was shown to us by the child. The child gives to us a whole social conception. It is necessary to work, not according to the command of another individual but according to one's natural tendencies. This is the child's lesson to humanity.

Independence and research of that great law that commands all men to work, this is a philosophy which people believe to be the Montessori philosophy. It is really the philosophy of children. The children have shown the way by assent, we must merely interpret what they mean.

CHAPTER 17

We have enumerated various ways to separate and classify the senses. In doing so we have analysed them. Analysis is one of the bases of our method. We analyse the use of objects, and we analyse all the difficulties that are to be found in a class room exercise.

These three series of objects, the Pink Tower, the Broad Stair and the Long Stair are made in such a way as to define and isolate in each series, the possibilities of differences in the three dimensions. What is the idea behind starting to explain dimensions to a child of three years? We do not explain anything to the child of this age, we only offer them these objects, which represent in a material fashion the differences in dimensions. By handling these objects and by observing them, these differences are perceived sensorially by the child, and not by descriptions. We can say, for instance that these rods of the Long Stair must be placed lengthwise one after another. Their only difference is in length. With the prisms of the Broad Stair, the same thing cannot be done because the surfaces placed one against the other differ and do not combine. The cubes of the Pink Tower, have to be placed one on top of the other, because they have no dimension in common. In each of these groups we have a graduated series of objects, objects placed in gradation of sizes. The only thing we do is to teach the children to use these objects in such a fashion as to make these diffe-

rences stand out.[1]

The gradation of these objects has been prepared following a special scale. In the Long Stair, for instance, each object differs from the previous one by the same amount. So if the first one is considered to be one, the second is double and the third is the second, plus the first. The difference is equal to the first in this series. Each series is composed of ten pieces. For the child the exercise with the Long Stair is a preparation to the understanding of quantity through sensorial differences. These objects prepeared in a series of successive dimensions, help to prepare and build up the mathematical mind of the child sensorially, because it leads the child to bear in mind certain differences in quantity essential in the field of mathematics. This develops in the child a certain kind of reasoning, an ability to judge quantity which composes the mathematical mind. In the Long Stair, the tenth rod is ten times as long as the first one. The tenth rod is one metre, the unit of measure used in our country. So the unit in this series, is the smallest prism, which is one tenth of a metre.

In the Broad Stair the gradation has been prepared in such away that the side of the square forming the cross section of the prism differs from the next one by one centimetre. If the side of the square of the second prism is two times that of the first, and so on in succession.

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1. The Cylinder Blocks A, B and C correspond dimensionally to the Long Stair, the Broad Stair and the Pink Tower. The Cylinder Blocks were prepared for the same reason as these series. Block A consists of ten cylinders of equal section, each differing in height. It corresponds to the Long Stair. There is the control of error built in to the material. If a cylinder which is too short for the cavity is placed inside, it disappears into the cavity. If the cylinder is one which is too tall for the cavity it will stick out. The error will show up at once. In Block B the cylinders are all of the same height but they differ in section. This corresponds to the Broad Stair. In Block C the cylinders differ in all dimensions. This corresponds to the Pink Tower.

Why preoccupy ourselves with all these details? Why prepare these materials with such precision? Why not give the children sticks of any length? Sticks of any length will not give the child systematic help. How difficult it is to explain these differences clearly in words even having the objects before us! How easy it is to handle them! If we offer to the child objects with mathematically determined differences, what a wonderful preparation it is for the children's mind, for him to later understand verbal explanations. Mathematics by means of words does not enter into the mind of the child. He needs facts in order to perceive. In the Long Stair in order to make the second prism, it is sufficient to have two prisms equal to the first one (the unit). To make the third prism, three prisms equal to the unit are necessary. Ten prisms each equal to the unit are sufficient to make the longest rod in the Long Stair. In the Broad Stair, four prisms equal to the first prism are necessary to make the second prism in the series. If we wish to make the third prism nine prisms equal to the first would be necessary. In order to make the fourth prism sixteen would be necessary, and for the fifth prism twenty-five. So a hundred prisms equal to the first prism are necessary to make up the largest prism in this series. So the gradation in the Broad Stair is different from the gradation of the Long Stair.

In the Pink Tower, to build the second smallest cube, eight cubes equal to the smallest cube are necessary. Four would only build half of the second cube. We would need twenty-seven of the smallest cube in order to make the third of the series. The difference is augmented from cube to cube. To make the last cube, the largest one which is the tenth in the series, we would need a thousand cubes equal to the first cube. So you see how merely by looking at the objects of any of the series, we enter the field of mathematics, as we can calculate between them any kind of scale or any measure. The mathematical mind alone permits us to

know things at a glance with exactness. These objects are measured in such a way as to be in exact relation of quantity with each other. The relations in quantity are mathematical relations.

We who know something about mathematics are immediately able to say that the smallest cube of the Pink Tower is a thousandth of the biggest cube of the same series. The child, will not see anything like this. He will merely see that one is smaller than the other. It is not necessary to give different objects to accord different types to the development of human mind. The mind, as it develops further, can see more and more things in the same object. The exterior world around us is always the same, it does not change as we study it. No, it is we who change, not the world. The world remains as it is. Outside, there is a tree. If a child passes it, he might say — " That is a tree! " If a workwoman passes it, she may say — " Look there is a fine shadow! " If a scientist passes it he may name the plant, and determine to what class it belongs. Yet it is the same tree! It is not the tree that changes. It is the development of the minds of the people who observe the tree that differs.

So if we offer a fundamental fact, it will be equally useful to all. So without any explanation we give the children these series which contain differences in dimension. In the beginning the only thing the child needs to do is to understand the differences of size between the different objects which are mixed up in disorder. He then has to judge these differences and place the objects according to the gradation of dimensions. Supposing the child wants to repeat the exercise again, he can jumble the objects and do it all over again.

Once a child was heard telling another — " This is a stair." The other child said — " No, it is not a stair! In a stair, all the steps have the same width. Here they are not alike!" How careful the observation! How quickly

the reasoning comes!

These objects are so large, that it would be impossible to do the exercise on the top of a table. Even in Western countries where tables are used a great deal, the children do these activities on the floor, on special carpets or mats. So one of the exercises of practical life is to spread out a carpet.

There is a special technique by which the prisms of the Broad Stair are grasped. Each prism is held with one hand, at the centre. Why so? What has grasping the objects in the middle with one hand got to do with mathematics?

In order to grasp these prisms of different widths, the hand will have to carry out a different movement for each prism. The amount of strength needed by the hand that we have to use will enable us to recognise the prism we lift when we do the exercise. We could almost do the exercise with our eyes closed, as it involves something which goes beyond mere co-ordination of movement. It is like a story carried out by the hand. We begin to understand—the larger the prism the more its weight. The small hand of the child can hardly grasp the biggest prism and it is so heavy that he almost cannot hold it. It is an exercise we might say in the study of oneself, a study which is very interesting without much explanation. The only indication we give is to ask the child to grasp the prisms in the middle. All the rest, the senses will tell the child.

In the Long Stair, we can either go along the length of each rod before placing it down, or take the ends of the rod between both hands so that the differences in the distances to which we open our arms will be a muscular indication of the length of the piece. In this fashion, the muscular strength of the child will develop. What a terrible weight for a small hand to bear! Yet we must not pity the child, as he will become stronger for the exercise.

If we arouse his interest then, the little hand which on the

first day was almost incapable of lifting the big blocks, a few days later does it without any effort. The exercise makes the whole body act, because he has to get the objects from the cupboard and place them on the floor.

There are a great many more exercises which are impossible to describe here in full, which an intelligent teacher can reason out for herself. If the teacher cannot, the intelligent child will find ways of doing the exercises! As these series are made of usual differences in dimensions, in order that these dimensions be clearly shown, we must arrange the rods of the Long Stair in such a way that one of the ends of each rod starts exactly from the same line as the others.

The cubes of the Pink Tower differ from one another in all three dimensions. By placing each cube in the centre the same edge is found all around. We tell the child to grasp the cube in the middle for the same reason as for the Broad Stair, so that he will be able to recognise the size of the cube by the amount of muscular strength he expends. Each cube has to be placed in the centre of the previous one without correction. By correcting, intentional movement is no longer practiced. We can ask—"Why all this perfection of movement? The child will probably not be interested in this at all." It is necessary. If we see pictures of the children taken while the children are building the Pink Tower, we see the expressions of children below the age of three, with their mouths pouting, with eyes so intent, their little faces frowning, as though on the placing of the smallest cube depended all their life. This means the child needs co-ordination. That is why it is necessary to arouse his interest with something exact. If we tell the child to jumble all the cubes, it would not interest him. Neither does it interest the child to put them each on top of the other in any order as they come to hand. If however, we offer the child an exact technique, it draws forth an immense inner power which helps the construction of the self.

CHAPTER 18

If we had formed the idea that this method is joyous and simple, and makes children happy we would be a little disillusioned. For the children it is enjoyable, and they are happy with the objects. It is not joyous or simple for adults. The narrow path we study is always a path to perfection, and further perfection is found at every step. In this children find their joy. If we seek the joy of children among flowers, among pretty things, or beautifully dressed people, we will not find it there. Childen have demonstrated that their joy is found in the continuous work necessary to achieve self-perfection. This is also true of the adult. There must be some special task, some special way of moving towards perfection, and in this alone will happiness be found. All these particulars lead us to believe that we need a more scientific basis than we have had till now for education.

How was the study of the cells carried out? We sought out the cells, in order to see intimately how all living things are constituted. We made use of the microscope. In order to observe the intricacies of life, it is necessary that the minute and intimate of details of life be studied.

So it is in the psychic field, and the child leads us to it. In order to penetrate more intimately into the psychic construction of the human being, it is necessary to go into these small details. The different divisions of sensations, have subdivisions. Some of our materials help a part of one

of these groups of sensations, the visual distinctions of dimension, colour and form. There is also material for the other various groups of sensations felt by our senses, like the thermic sense, the baric sense, the sense of hearing, the sense of taste and the sense of smell. And you will see that in each of these material we have tried to isolate the stimulus so that it will answer to the need of only one part of these sensations. And all these separate divisions, these isolated groups serve to help, what we term, sensorial education.

In nature, what the child sees, is the object. This object in itself has more or less got all these forms of sensorial stimuli. If the child sees a flower, in it he may sense many things — its colour, its scent, its form. In nature all these qualities are found to exist in the same object at the same time. Would it then not be much more natural to give the children a series of objects so that the child could touch it and see it as well. Yes, indeed this could be done, but then think of all the objects that we would need in the school! We could take the child for a walk in the garden so that he can see a tree, or a flower, or we could take him in the streets, to the bazaar so that he may see many objects. We should be giving the child a very miserable experience if we gave him only these. Children of three years by simply moving about or going out in the garden, observe nature. They are not blind after all. Do you suppose that if a child hears music when he passes through the city, he shuts his ears to it? If there were scents of flowers when he went into the garden, do you suppose he would shut his nose because the flowers were not meant to present this smell to him?

What we call education of the senses is in reality an aid to the construction of the intelligence. Sensations of hearing and of sight all help to build up intelligence. All these sensations are received by the child from the outer environment. He does not receive them as if he were a looking glass which reflects what is before it, merely contain-

ing, an impression of the objects arond him at the given moment. It is in the nature of human mind, and therefore, also of the mind of the child, to extract from the object the qualities that he sees, and consider them apart. This forms part of the nature of man. It is so natural that sometimes we do not notice it.

The human mind takes in not only the images of objects from the environment, but forms from them an abstraction. From many red objects a certain idea of the colour is received which is isolated from any object. We feel many degrees of warmth and cold, according to the climate of the place that we live in, according to the seasons of the year or according to the objects we touch. Little by little we do not think of the seasons or the climate but merely feel warm or cold. This also is an abstraction. In life we come into contact with many things, some smooth and some rough to the touch and little by little we form an idea of somoothness or roughness which is not tied up with the object. We eat many sweet things, or salty things and little by little we form an idea of saltiness or sweetness which is not connected with any special food. We hear the bells of the cows going home or our National Anthem or perhaps a religious song. Soon we begin to abstract from these songs—religious or popular—the idea of music. We hear a mother talking to her child, we hear a father scolding his son, we hear a teacher teaching her lesson. All these are determined instances of speech. Yet after a while we talk about language. This too is an abstraction.

What is this abstraction? It is merely that from the millions of things that we can see around us, we abstract a quality from many objects which possess that quality, a unit which is common to all things which is taken to form an idea. Quality does not exist in nature. It exists only in the mind of man. It is the power of the mind of man which can make this kind of synthesis, which can distinguish one

thing, taking it from millions of others.

Keeping in mind all the millions of objects that we have seen, just as a mirror reflects millions of objects from a passive, mechanical environment, is different from getting one idea, one image out of these million sensations. It is an elevation, an ascension. Down below in the field of sensaton there are all these millions of material objects out of which the mind of man elevates the difference and creates something new.

The child possesses this power too. Only he makes the abstraction without knowing it. Nevertheless, it is a very great achievement. There are words to express abstractions— green, red, yellow, big, small, smooth, rough — we say these words without having any specific object. This power is given only to man, and is one of the characteristics of the human intelligence. It is perhaps one of the things which distinguishes men from other forms of life. Though animals can distinguish between objects (the dog can recognise its master from the other human beings) the power of abstraction belongs only to mankind.

There was a famous French educator who took into his care a child of very low mental powers. The educator succeeded in making him recognise objects — a pair of scissors, a book. Once, the educator asked this child to go and fetch a book from a room nearby. The child returned after a long time and said that there was no book there. The teacher who knew there were many books there went to the next room were the books were kept. He found that the particular book which he had shown the child was not there. Then the teacher tried to show the child that all were books, so that the child would grasp the idea of abstraction, but the child could not neither generalise nor abstract. That was the difficulty faced by the educator, a difficulty which he never overcame.

Instead, the normal child takes in these things naturally,

and while he takes in the images and the words, which represent the images, he also takes in that abstract quality which he can apply to other objects.

If we stop to think about it, when we adults talk, we talk of ideas, of abstractions that we do not even see or imagine. We are imaging all the time. We seldom talk about things that we see. When I tell you that I come from Italy, you understand me perfectly well. Yet you have never seen Italy nor have you the measure of the distance that I have travelled to come here. A word, an abstract idea I give you is sufficient because we do not talk of the things that exist, but of things that we have in our mind, which are on a level, far above the level of material things.

When we speak of the needs of the Indian people[1] and of their rights, do we know the Indian people for whom we are fighting, for whom we give so much of our energy? Even if we could see them we could retain perhaps a hundred faces in our mind or even five hundred. After that our power would be very limited and we would be able to remember only a few of the faces. Therefore we speak about reality in an abstract way. When we talk about the Indian people we talk about people who really exist, real men who live in a country called India which has its own plains, rivers and mountains. We must conclude that man with his mind can take in an immense distance, cover the whole world but only in the field of abstraction. When we talk of America, New Zealand, the North Pole and the South Pole, we speak as if our hand has touched them, as if we know all about those places. We talk of the real things that exist there, because they exist in our minds, by the effort of our intelligence. This intelligence is helped by words, which are abstractions in themselves, which tell about other abstractions. I may say *mountain* in my language but you do not

1 India was governed by the British at this time. Independence was achieved in 1947.

understand my language. It is to you a mere jumble of sounds. If you had seen a mountain, you would have recognised it. So we live in the world of the mind which is a world above the real world. This forms the correctness of the individual mind. If we had only to talk about the things which we have really seen with our eyes or touched with our fingers, what poor intelligence we should have! That is why, the child soon after he is born is avid, his avidity growing with all the five senses, till he acquires the power of asbtraction.

The human mind understands different sizes and quantities by perceiving objects, and takes one or the other of the sensations apart until it has made all these abstractions, thus carrying a classification of the world around us. If this classification did not exist, chaos among men would subsist forever. All these classifications of abstractions are a mental construction. What a great help must it be for the child who has abundant natural forces, to see materials in a series of objects, then to put them in order systematically. This possibility must be an enormous help in the organisation of the intelligence. So we give to the child these objects which are called *materialised abstractions.*

The child also brings to this exercise, a study of self, a study of one's own possibilities. We can clearly distinguish forms from colours and sounds. As it is a realisation of the self it is also a further help to development. All these classifications that we have formed help us to see the external world. We do not see with our material eyes, we see by means of the eyes of our intelligence. Suppose I have for some special reason become interested in the colour purple, I see purple much more clearly in the environment around me. If I have carried out the study of colours, colours interest me more. If I go into musical knowledge, far enough to recognise and understand certain sounds, music interests me much more. I feel music notes I had not felt

before. The child after he has gone through a sensorial education, has the impression that he understands the outer world much better. One child having gone through all these sensorial exercises said — "I know everything!"

It is with mental impressions that we see the world, not only with the senses. If a botanist passed through a forest, every step that he takes is full of interest to him. Everything that he sees arouses his enthusiasm. He notices so many details, so many shadows, even the hairs of the leaves. The same forest, to a man who is not a student of botany, is not interesting. He passes through the forest without seeing it. Both have got eyes; one sees,the other does not. In a music concert, there are people who have a special interest in music and others who do not understand music at all. The people interested in music will distinguish all its beautiful notes, while those who do not understand it will not be able to appreciate it even a little. We may thus have eyes and be blind to many things; we may have ears and be deaf to many things. Our correctness is not made by our material sense but by the extent of our mental construction.

For the mind to imagine with real details, it is necessary that the individual begins to explore the world by means of these senses. That is why sensorial education represents an essential aid to the mental construction of the child.

CHAPTER 19

Human progress began when man learned how to observe. It is only when we look at an object exactly that we observe this object. We can look at anything unconsciously, without attention, and then again we can look at it with keen preparation. A great deal has been said about the science of observation. Observation does not refer to seeing. In order to observe, we do not wear special looking glasses. Progress and advancement in science did not depend merely on seeing things, but on seeing them armed with special preparation, special mental training. Observation itself has become a matter of method, a method which is limited in an exact way, by which the object under study becomes sharper, keener, and more easy to penetrate.

A man who has poor eyesight needs help in order to see. A man who wishes to observe, to study exactly, needs help from the marvellous instrument given to him — the intelligence. The science of observation, is an experimental science. It is also an exact science. When progress is made, knowledge is achieved. Deep knowledge of something means refinement in gathering in sensations by means of sight. Sight is the most intellectual sense; it collects the greatest number of intellectual sensations. There are a great many of these, intellectual senses. Scientists, the students placed on the path of scientific observation, begin to love the things which they observe. It is striking that the man who learns to observe scientifically attaches himself

to what he observes, not by means of his senses, but by means of a special kind of love. How can we term by any other name, the great interest, the great enthusiasm, of the man who has begun to observe and take in reality in an exact fashion, except by the name of love?

When we speak about an interesting person, a person in whom we feel a special interest, we mean that we have really seen that person. What happens when there is someone who interests us in a special way? We see this person clearly, with all particulars, in all detail. So many details which escape the eyes of other people, do not escape our observation. When we begin to feel this affection, it is not merely the exterior details that we wish to know, we feel a hunger for knowing everything about this person. Everything that we hear about this person is of interest to us. So science has not only found an exact way of observing, it has found a way to observe with interest, with love, with passion! How can we term otherwise this interest which changes the life of a scientist, who is no longer interested in going out to amuse himself, who no longer cares for amusement, whose sole interest is to go deeper and deeper into the study to which he has dedicated his life?

I see in this fact the achievement of progress. Progress is possible only due to a new kind of love which enters the heart of man. This love causes him to observe something, to penetrate into it and carry out his studies. The discoveries which have arisen out of this feeling of love, are not for the scientist himself, so that he might sleep peacefully, or eat better than he did before the discovery was made, but for the service of the whole of humanity. Have not the men who wanted to know something, who loved their studies, whose lives did not last until the discovery was made, been spoken of as the martyrs of science? How then can the discovery be termed as a material refinement? The fact is that we must not exclude the material world but penetrate it.

A cursory glance at the fact helps us to recognise that the child by nature is a reviewer of his environment. He is very curious and likes to observe everything. In our method, we say that the child loves his environment. He takes from the environment images and impressions, in the sensitive periods. He does not look upon things distantly, but assumes them in his own personality, and a change takes place within him after this observation. Now, if we propose to help the child to take these impressions from the environment, we must prepare him suitably to observe in an exact way. This help will enable him to give a scientific order to the abstractions which he has succeeded in elevating from the exterior world into the abstract level of his mind.

Sensorial education offers the child, a scientific method of observation by means of materials. These materials aim to isolate a special sensorial stimulus from the others. If we prepare this apparatus in a methodical fashion, and offer it to the child by means of a special technique, the child would be able to solve a great many problems by himself.

If we would like to offer the child the visual sensation of colour or geometrical form, we have to give him an object. To offer the child a colour is not easy, for a colour is an abstraction. How can we give him an object and an abstraction together? It is almost impossible to find a perfect solution to this problem. If we give him an object, the object offers so many qualities besides that of colour — weight, a tactile sensation of either smoothness or roughness, a thermic sensation and all the other qualities of a material object. If we want to give the child two colours, red and yellow, we must give him two objects, which are alike in every detail, in every quality, which differ only in one item — colour. As the objects are the same size, the same weight, alike in all other qualities, the only quality that will stand out is the quality in which they differ. Therefore, the objects give the child an impression of the only thing by which they

can be distinguished from each other.

To give the child an impression of the sound of the octave, we must prepare material keeping in mind a number of details. To offer impressions of sounds we cannot use the metal bars of different lengths[1], which produce different sounds, as we see a gradation of length in the bars which are longer or shorter than the next. They differ not only in sound but also in dimension. Instead we must find some bells that will produce different sounds, although they are all of the same size, the same colour, each with a wooden stand to rest on, so that they appear to be entirely alike. It is only when we touch them with a striker that we can isolate the quality of sound, as all the other characteristics are identical.

Similarly, if we want to offer the child the impression of noise, we can give him big stones which when dropped makes a special sound, and then smaller stones which will make a softer sound and sand, which will make no sound. However each of them has a different aspect, a peculiar quality, so the noise will not stand out by itself. So we must find objects which look absolutely alike in every detail and yet produce different sounds when shaken.

A very interesting fact is that all the things which look absolutely alike, have hidden in them something which makes one different from the other. This is perhaps the natural way in which a special quality can be isolated. We must therefore strive with every effort to produce objects which are absolutely alike, and at the same time isolate one quality, which are suitable to be handled by the child. Then we see the child studying, really studying, observing time after time these objects which have this hidden quality.

We can help the child to observe everything which

1. Commonly this instrument is referred to as a *xylophone*. Originally xylophones were made with wooden bars.

surrounds him in a more acute fashion, by means of a psychological method. If two objects are alike, to recognise the identity between them is the easiest thing. In fact, we do it almost instinctively. If we place two colours, each resembling the other, we instinctively try to see if they are or not alike. So the first step is the recognition of identities. There is some thing else which helps us to perceive things — contrast. Contrasting notes in a song, a very high note and a very low one, are very easily distinguished. The second step is to notice contrasts. The third step is to recognise the finer differences between two objects between the identities and the contrasts. It is very difficult to see the difference between two objects which resemble each other. In a series of objects which are graded isolating a special quality, each object is very near in that quality to the next. The recognition of things which are very similar to one another can only be achieved by exercising oneself, by close observation.

If we go to a foreign country inhabited by a race different from ours, all the people look alike. It takes some time to distinguish one person from the other. By living among them day after day, looking at them closely, little by little we begin to distinguish one from the other. After a few days we do not confuse them any more. If all of a sudden we were confronted by twins who were completely alike we would be struck by the identity immediately. When we go to a different country we are not able to distinguish between people because they look alike. However we know that they are not identical and that each face is different. It is difficult for us to see the difference because we notice the similar characterstics easily. Among the people of today, we have mighty people, slender people, people with black hair, fat people, people with fair complexion and so on. These things immediately strike us, and there is a kind of inner work in our minds which leads to the distinction between things.

So when we prepare these objects, we must not only try to isolate the sensation, but also as far as possible keep in mind these natural habits in recognising things. Therefore we can also offer two objects which are identical in the quality which we would like to isolate, along with two more objects also identical, but which contrast with the first pair in that quality. For instance we can offer the child four spools, two of which are red, and two of which are blue[1]. By this we furnish him with a method of observation. Now, the child will be able to apply this method of observation to the exterior world to distinguish between these identities or the contrasts. We cannot offer this method to a small child by means of an explanation, but we can give him certain objects which include this method in themselves. We can present to him contrasting pairs of identical objects, two by two. This can be called *procedure with method.*

There is another particularly interesting fact. When one of the senses becomes defective, almost as a compensation, another of the senses becomes more acute, more effective and more capable of observation. It is common experience that if there are too many visual sensations, brilliant colours and forms, in front of our eyes, it is more difficult for us to feel the refinement of a concert, to appreciate the music fully. So after a concert by a renowned artist, when the electric lights come on, we look around and see the clothes other people are wearing, how the theatre looks and so on. After the concert is over, it is as though the eye was saying to the ear — " Now, I can perceive things better !" We often say that the blind see by means of their hands. That means that their touch is very much more developed than the rest of humanity. Deaf people see many more things than we do. They may understand what a person

1. Today the first presentation of colours is done using three pairs of colour tablets — red, yellow and blue.

is saying without hearing the sound of the words, merely by sight, by watching the lips move. In the days of silent pictures, at a time when talkies did not exist, the actors moved their lips in order to give an impression that they were talking. In one picture, the actors used all kinds of impertinent, terrible and even unpleasant words, because they felt they could say anything as in any case the public did not hear what they said. However some deaf people in the audience understood the words by means of the movement of the lips, and said — " What a shame! Such terrible words in such a highly religious and moral film !" The deaf could see the words come out of the lips of the actors. Therefore, there are compensations when one sense is lacking, to take in the images in the environment.

When we deal with the sensorial education of children, we must also consider that by suppressing the function of one sense, the other sense becomes more acute, more refined. For instance, if we have to study some tactile sensation, if we shut our eyes, we can perceive this sensation better. So it is between eyesight and hearing. We can render one sense more acute by more or less eliminating the other sense.

I was once in a theatre in London, where a very famous actress sang in a voice which was exquisite, but which did not clearly reach my ears. I shut my eyes because I felt that there was no hope of hearing her. If I closed my eyes the voice reached me, if I opened my eyes, I could not distinguish the words!

I experimented with this on purpose. We initiated a child persuading him to close his eyes while perceiving other sensations, not in order to make him more attentive, but to offer him an opportunity of better perceiving the material at hand. If we touch a smooth surface lightly, and then close our eyes and feel it, we perceive the texture in a different way, the sensation is stronger.

Lastly, there is another aspect of sensorial education which we call the preparation of the organs. By organs, we mean the organs of the senses, the eyes, the skin and so on. In my country where it is very cold, sometimes our hand gets numb, and it is very difficult to feel any sensation of roughness or smoothness. So before feeling anything we begin to rub our hands so as to reactivate the circulation and render it sensitive. By rubbing the hands briskly we can perceive the sensations of touch better. We use this technique, whenever we wish to feel differences of surfaces. These details also serve to bring variations and therefore, a growing interest to the exercises, and teach the child to enter more deeply into the particular. The child may have this need for scientific preparation and observation within the limits of childhood. The child thus treated acquires a greater capacity for seeing. He really begins to observe.

Although the technique is embodied in the material, the child does not limit himself to the material which gives to his mind a method of observation. When a person with defective eyesight does not possess spectacles, he is not interested in the things he sees, he passes them by. With spectacles he sees better, and is interested in his surroundings. When he wants to get a pair of spectacles, the oculist presents a table on which different things are written down, points to a line, gives him a pair of glasses and asks him if he sees well. If the answer is no he gives him another pair of glasses and asks if he sees better. Finally, he does not remain inside the oculist's place, but takes the spectacles and goes out. It is then that he sees all the things he did not see before, jump out before his eyes. The preparation of the mind of the child by this method, is like the spectacles which helped the man to see. Even as the spectacles are carried along with the man with defective eyesight, the child does not leave his new perceptions at home, he takes them along with him into the world.

CHAPTER 20

All geometry begins from and progresses around three plane geometric figures, which help us to develop our minds, and are a means of psychic development. They are presented to the child by means of materials[1] which help us recognise identities and contrasts. We begin geometry with the equilateral triangle, the circle, and the square[2]. If we take away the three figures from their frames, and place them on the white space next to them, we see that the insets which have been taken out are identical in form to the frames which held them — so there are two circles, two triangles and two squares, each pair equal. We can prove this by placing the insets into their respective frames. The exercise is very simple, to take the insets out of their frames and to place them back. These exercises require the movement and exercise of the hand, because in this activity it is the muscular movement which allows the psychic energies of the child to concentrate. This is very important. Children are skilled at taking in everything with their hands. It is in their nature to do so. They even take in their ideas by

1. The three basic figures are found in what is today called the Presentation Tray. This tray belongs with the Geometrical Insets. The frames into which the shapes fit are yellow. The frames are set on a tray with a contrasting blue floor. The insets are of the same blue with knobs set in the middle.

2. These three figures appear on the first page of Dr. Montessori's book *Psycho-Geometry*.

using their hands — the more the movement of the hand, the more the ideas taken in. It is then that the child notices both the form and dimensions of the object he holds. In this way, the child's attention can be fixed, thus his ideas become fixed and are impressed into the mind.

In the small child, the hand is one of the great intellectual organs, an organ which has an important role in the formation and co-ordination of the intellect. So, we use the movement of the hand in relation to these geometrical forms, not only to lift them out of the frame but also by a method of touching the contours of the figures. By this movement, the stereognostic sense, (the sense which is made up of touch and muscular movement) takes in the geometrical form of the figure. This method is also of great help as an exercise for the co-ordination of the movement of the hand. We not only ask the child to touch the contour of the inset taken out of the frame, but also to trace the outline of the figure in the frame itself. It is interesting to feel the difference of form through touch. By the repetition of the movement required to go round the angles, (it is in the nature of the child to repeat) we arrive at the fact that in the figure of the square, all the angles are alike. How well we understand that in the circle, the hand meets with no angles. When we go around the edges of the triangle, we immediately feel the sharpness of the angles, recognise and feel the quality of its size. The child explores the figures in two ways — through sight and movement. The activity affords him great pleasure. It is at this stage that the child fixes the forms of three figures in his mind.

When these shapes are first presented, they are in sharp contrast to each other. The classical contrast in form is between two figures, and not three. When we present the concept of large and small, we take two cubes of the Pink Tower, the large cube and the small cube in order in show the contrast. In the same way we see contrast in light and dark-

ness, tallness and shortness, hot and cold. So generally contrast, in a classical way, is between two ideas.

In these basic figures real contrast is between the circle and the triangle. The triangle represents a polygon with the least number of sides, because no polygon can have less than three sides, there would only be two open lines. The circle is a closed figure with an infinite number of sides. In the circle, each point is considered as a side, a line which forms one of the sides of a polygon. So the triangle and the circle represent a contrast because one has the minimum number of sides, and the other the maximum number of sides. This contrast immediately rises into the abstract, as an absolute contrast.

Absolute contrasts are found mainly in the field of geometry. If we look for absolute contrast in another field for instance, light and darkness, we may think of a more dazzling light or a deeper darkness. When we present a contrast using the smallest and the largest cubes of the Pink Tower we may think of a cube smaller than the smallest one or larger than the largest cube of the series. So the contrast is not absolute. In geometry although we deal with abstract ideas we have an absolute. In the triangle, a figure which has the least number of sides is a figure which could not have less than three lines to form a polygon, and in the circle, the lines are so numerous that each one of them must become a point.

We offer to the child the reality; we present to him an absolute contrast in material form. There may be triangles of different dimensions, bigger or smaller, of different forms, regular or irregular but they are always triangles, and have a space enclosed by three lines. When there are so many triangles in the world why do we isolate one, and call it a triangle? A triangle is an abstraction. In the world there are a number of objects shaped like triangles. If a triangle was shown, and the child was asked to seek it in the material

world, he might not find it because he had not been able to abstract the concept from the material object. He may not have understood the abstraction, or what a triangle means. These two striking geometrical figures create a deep impression in the mind of man, which is inspired by these figures, which are symbols of an absolute.

Why do we present these three figures in this first presentation, all at the same time? The square is a figure of great importance. It is the figure closest to the triangle, because it has just one more side. All its sides and angles are equal, just as in the equilateral triangle. There may be larger or smaller squares, but they always have four equal sides and four equal angles. In this first presentation of the three figures, the circle, the square and the equilateral triangle, we offer the child without explanation, the basis of plane geometry and its methods, by isolating these figures and materialising them into plane insets.

We must always offer fundamental concepts to the child by means of objects so that they can be taken in by the senses. So in the field of geometry we begin by offering the child these three figures. It is certain that the child has seen the figures in the environment many times, merely by looking around him — a rectangle of light that passes in through the windows, roofs in the shape of triangles, bamboos crossed into squares by the side of the house, a circular plate, a rectangular table. The child may have had parents who wore round spectacles. He may have seen a box of circular drawing pins. He may have looked into the eyes of his mother. How many times has the child walked in the midst of geometrical figures? He cannot look around without finding one or another!

The enormous number of figures, may have hit the intelligence of the child in a confused fashion. So out of the vast mass of geometrical figures we isolate three to present to the child. This is the service that we render to the intelligence of the child. The child cannot isolate these three

fundamental figures for himself, therefore we do it for him. These three figures, already striking in their contrast, are more likely to be fixed in the child's memory as we make him touch the edges of the figures — the insets and the empty frames. We extract these fundamental figures from the great quantity of things which exist in our environment, and present them to the child by means of the psychological method of isolation using identities and contrasts, and by adding the sense of touch to the sense of sight. For instance if we were among many people, we can see that they are ladies and gentlemen. We have seen many more people before this. Then one person comes up and introduces us to another person and says — " This is the Director of the institution." Yet another person is pointed out — " That is the Porter of the institution." They do not say — " This is a man, this is a woman, this is another woman! " We can see that! However we have been introduced to certain people who are of a special importance. So out of many geometric figures, we present the chief ones, of fundamental importance.

Why are these three figures of such great importance? The figures which compose regular or irregular plane geometrical shapes have different functions to perform. All these functions will be better understood by the child later, as the study progresses. However to explain the first presentation that we offer the child, I have taken it upon myself, to arbitrarily give these three figures names indicating their functions. These names are not idealistic titles but the names of the tasks that they carry out in real life. The triangle is a constructor, the square is a measurer, and the circle is a calculator. In the development of geometrical knowledge, these three interesting and important figures will always remain fixed.

CHAPTER 21

Whether we talk of regular or irregular figures, it is always triangles which build them up[1]. When two triangles which are alike, are put together, they form a square (fig. 1). When two equilateral triangles are put together they form a figure called a rhombus (fig. 2), which has four equal sides. Two different triangles placed together form the rectangle (fig. 3), which is similar to a square. Two triangles of different families, form a trapezium (fig. 4), when placed together. Six equilateral triangles when placed together form a regular figure, a six-sided polygon called a hexagon (fig. 5). The exercise of building up geometrical figures by means of triangles, can be given even to a very small child. Using the knowledge of the forms that triangles make, we can learn something about every figure. These figures are the keys that open the universe to us, these are the keys to the omnipotence of the human mind.

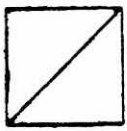


Fig. (1)

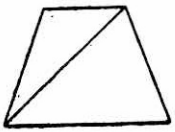
Fig. (2)

Fig. (3)

The circle is called the calculator because it calculates the extent of the opening of the angles. In three circles of different dimensions — a very

1. *Constructive Triangles,* the materials used to demonstrate to the child the role of the triangle as the constructor of other figures, is found today in four boxes. Each box has cut out triangles with sides delineated in black to help the child construct the shapes.

small one, a medium one and a still larger one — the angles at the centre are equal. When the circles are superimposed so that the vertex of each of these angles are on the vertex of the others, and each line of each angle on the corresponding lines, they form one angle with long arms. The circle may become larger, but that would only mean that the arms of the angle would grow longer; the opening of the angle would remain the same. This is something that requires the power of abstraction in the mind of man. We could enlarge these circles until they were as big as the earth, yet we could always measure them by means of these little angles which are all alike no matter how big the circles!



(Fig. 4)

Fig. (5)

By means of the circle, the angles of the different triangles can be measured. This is a simple fact, which can be drawn for everybody to observe, but it is marvellous nevertheless, because we can measure, something very very far away by means of a small object near us. We know that it is possible to measure angles by means of a certain instrument and this is the key to measure enormous distances. So by measuring the opening of the angle in the instrument we can calculate distances that separate two things which are very far away from us. By means of the circle we can calculate distances of the infinite.

When we wish to measure any surface, we always need the square. Every time we talk about a surface, we say that it is so many square miles or square yards. The sides of the square are alike, and all the angles are right angles. This makes it easy to learn everything else. Therefore it is a universal unit of measure. In arithmetic, the square has a very unique place. We use the square as a key because it has four equal sides and four right angles. This

enders it easy to find out many things about it. For instance, the squares of numbers are called so, because the squares are used as the basis for measurement. There is also mutual help between the three figures. The circle is a master who sets very exact limits, placing the different figures in relation to each other.

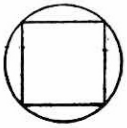


Fig. (6)

Consider these two figures—the square with a circle inscribed in it (fig. 6), and a square inscribed in a circle (fig. 7). We see that these two squares are in certain relation to each other. This relation is defined by the circle because one square is just outside the circle, its midpoints just touching the circumference. The corners of the other square touch the circumference of the circle at four points. This might seem a mere accident, and of no importance. The smaller square which is inside the circle is exactly half the value of the one outside the circle. The squares are in an exact relation with the circle — the sides of the outer square are the tangents of the circle, and the corners of the inner square touch the circumference of the circle.

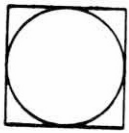


Fig. (7)

Regular plane geometrical figures thus lend themselves to many combinations which seem to be a mere changing of position between the figures—a circle which circumscribes a triangle, a series of circles and squares inscribed within each other, each square half of the larger one. The third square being the third is half of half, therefore one fourth. These interesting relationships make the study of geometrical figures fascinating. By studying figures which we can see and handle we begin to discover the secrets of geometry.

CHAPTER 22

Do you know that Archimedes was very interested in the study of geometry? Once during war time, when he was calculating some triangles or other, someone said to him — "Run! Some soldiers are coming to kill you!" Archimedes replied — "Leave me alone, do not disturb my triangles!" The soldiers did come to kill him, and he said — "Leave my triangles alone!" When the people woke up they found him dead. Thus those who have occupied themselves in the study of geometry have given us proof of their love and insight into the subject.

We can see that geometrical relationships are not only exact, but that they also bring beauty to static combinations. The art of decorative geometry, comes forth through combinations of figures which are in relation to each other. These figures measured in an exact way, not only appeal to the human mind but also to man's sense of beauty. The decorative art of which the geometrical figures were the basis, had a very great importance in the past. It has now fallen into disuse. Why so? Very likely it is because geometry is no longer studied, and geometrical figures are no longer handled. Archimedes really had circles and squares which he could handle. Giotto an Italian artist, who was famous for his decorative art, worked with squares and triangles. If we merely think of triangles and circles, we find them difficult to visualise. In order to arrive at these abstract relations we must have a great deal of practice with

combinations carried out with objects like these, which form the basis upon which the abstract can later be built. When we study these exact measurements and the geometrical relations between the figures in a text book, by words written down, they remain obscure, dry and very difficult to understand. If we study them by handling objects they become so fascinating, that we begin to work on them discovering enormous truths which cannot be found even in books.

In Europe, in America and even in South America, the study of geometry is carried out using a book written by Euclid more than two thousand years ago in Greece. Why after all these years, do intelligent people study geometry from a book which is so dry? Have people lost all their intelligence since then? Was Euclid inspired by some god who left him all the geometrical relations upon the earth so that men after centuries wish to know what he talked about? It is evident that people in past centuries handled certain objects, so that they could understand certain relationships. On this account they made a number of discoveries. Therefore, they became very interested in geometry, and acquired a passion for it. Now the studies are carried out from the book of Euclid, in which demonstrations are written out, so the study of geometry becomes arid, and difficult to digest.

The mind of the child finds geometric figures fascinating. We have seen evidence of this. Very often when we give them these figures to handle, children have discovered relations between figures. These figures alone have led them to reasoning. It is certain that one of the most fascinating studies for children concerns mathematics. As for geometry, some of our children have developed a real eye. This has happened so often that it has become a characteristic for which our schools are known. The child has an infinite capacity to create, and each child creates something different

from another child. This shows that the geometrical figures also serve as an artistic inspiration, and a very great number of activities open up for the children around them. Therefore it is important that we understand how this material is presented to children. The reason we give so much importance to this geometrical material is just to offer the child a means of building up the abstract mind.

A very striking, very curious fact is, that the children in our schools love mathematics more than anything else. By nature, they prefer mathematics to all other subjects. It arouses in them the greatest amount of interest, a real passion. They achieve a progress in mathematics which has caused us all great surprise.

This seems such a contradiction, because we believe that children are never successful in mathematics. It is a well-known fact that in traditional schools there arises in the child a mental barrier against mathematics. If I taught mental mathematics to children, they might smile at me nicely, and look at me with interest but they would be blind and deaf to what I said, and ignore it. As soon as mathematics is mentioned, such children shut off their minds. This mental barrier, is a kind of illness found very often in children. Ninety per cent, of the children who come to study in our schools, have barriers against mathematics in their habits which disappear afterward. It is not that they do not know mathematics; but they find the calculation very boring. Even the teachers when asked about mathematical tables shut their eyes and transmit it by memory to their victims. They recite what they study. It is unusual to hear someone saying — "What a wonderful time I am having when I am doing my multiplication!" Yet, this is a common expression of the children of our schools. Our teachers are surprised when they tell us that after carrying out the exercises with the material for a while, many children acquire an interest in mathematics and lose the barrier

altogether. So this material has proved itself very useful not only to teachers, but also to the students of high schools who study algebraic or geometrical problems, who cannot understand them at first, but who do so once this material is given to them. It is as though their vision has improved.

The great French philosopher Pascal, demonstrated that the human mind by nature is a mathematical mind. It is interesting to find that all the things created by man have one mathematical side. In order to create, we must be able to determine something, the determination in itself is a mathematical fact. If we think about things which seem to be far removed from mathematics — music, for instance— even there, mathematics creeps in by way of measure, rhythm and so forth. We find that poetry differs from prose, among other things, in the way the syllables are measured, and counted for in each line. Even in dance there is a rhythm, a measure, which compels us to recognise its kinship with mathematics. Even spiritual things have got a mathematical basis. A certain form of mathematics has served to form a school of philosophy, founded by Pythagoras.

It is certainly interesting that the mind of man seeks a determination, an exactitude, because by means of these it can create things which are bigger. Great creations come from the mathematical mind, so we must always consider all that is mathematical as a means of mental development. It is certain that mathematics organises the abstract path of the mind, so we must offer it at an early age, in a very clear and accessible manner, as a stimulus to the child whose mind is yet to be organised. If instead we began to tell him what was found by other people two thousand years ago, and make him learn these abstractions by rote the child would only be bored. All mathematics is a stimulus for abstraction, by the means of which the mind of the child begins to organise itself on the abstract plane.

CHAPTER 23

Geometrical figures realise abstract ideas which form in the human mind. They have fixed relations among themselves, but have no relation in terms of their size, or the amount of space they occupy. When we observe these figures, we really do mental work over the form of these figures; not over the dimensions of their forms. If we can see certain fixed relations between forms independently from their dimensions then we have taken in the forms in an abstract fashion separating them from the quantity.

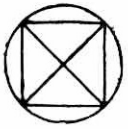


Fig. (8)

In the sensorial apparatus, we isolate only one of the qualities of matter. In the geometrical figures we isolate the form. We have here a square which is inscribed in a circle (fig. 8). The square is made up of four triangles joined togeher. Two sides of each of these four triangles start from thecentre of the square, and are each equal to the radius of the circle. A pentagon inscribed in a circle (fig. 9) is formed by five triangles, each of which have two sides equal to the radius of the circle. A hexagon inscribed in a circle (fig. 10) is made of six triangles. It is different from the other figures because all the three sides of each triangle are equal to the radius of the circle. In an eight-sided octagon (fig. 11), made

Fig. (9)

Fig. (10)

up of eight triangles also, two sides of each triangle are equal to the radius of the circle. In the case of the square, and in the case the pentagon, in each triangle the side which forms the chord of the circle, is longer than the radius of the circle. The hexagon, can be placed in the centre, because it contains six equilateral triangles. In the hexagon the side of the triangle which forms a chord with the circle is equal to the radius of the circle. In the polygons which come after the hexagon the side which forms the chord of the circle becomes successively smaller than the radius of the circle. As the number of sides of the polygon increases, the length of the side of the polygon decreases and the polygon occupies more of the surface of the circle. We may think of a polygon with twenty, or forty or even a hundred sides! Perhaps our eyes and hands would not be able make the lines of such a figure correctly. Even if it was done it would not be a circle, it would be merely a hundred-sided polygon! We could make a very big circle and inscribe in it a polygon of one thousand sides. Nevertheless, we would always find space left between the side of the polygon and the circumference of the circle. Even a polygon of hundred thousand sides, would be different from the circle. Using our imagination, we can see that by augmenting the number of its sides, a polygon tends to become more and more like the circle without ever reaching the circle, thus never surpassing the limit. With the authority it has, the circle says to the polygon — "You are free to grow, but within a limit. You can never grow bigger than me. You will always be contained in me!" This limit may seem infinite yet it is a very precise, a very exact limit. Even when we have a polygon with a hundred thousand sides, we are able to distinguish the sides freely, because the form is independent from dimension. No matter how

Fig. (11)

many sides it has, a polygon will always be contained in the circle; it will always have a smaller number of sides than the circle.

This brings us to a philosophical idea. The polygon, may grow until it merges itself with the infinite — a circle. This infinite has a limit — the circle is limited — a limit that the polygon may never reach or go beyond! So these forms, are to the abstract mind, the tools by which it can organise itself. When the abstract mind organises itself, it does so according to its own means. Not all minds arrive at the same point, some grow and realise more, some less. This depends on the capacity of the individual. However everyone is helped by the external world to develop their abstract world. Among the infinite number of polygons which can be inscribed in a circle there is one, just one, the side of which is equal to the radius of the circle — the hexagon. Each of the triangles, which compose the hexagon is an equilateral triangle. Of all these infinite triangles, only one is distinguished from the others and can be represented as a centre, not a centre in terms of quantity, but of form. Beyond the hexagon of six sides, there are any number of polygons, and before the hexagon there are only three. So we call it a central form, because before the hexagon the sides of the figures are greater than the radius of the circle, after it the sides are smaller.

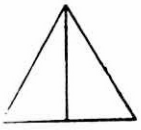


Fig. (12)

The triangle which composes the hexagon (fig. 5) the equilateral triangle, has the faculty of constructing the most harmonious forms. If we divide an equilateral triangle into two right angled triangles (fig. 12). and join them with their hypotenuses touching, we have a rectangle (fig. 3). This rectangle which comes from the centre of form, the centre of proportion, is considered the most beautiful, most harmonious form, representing a centre of absolute beauty. If we cut a rhombus (fig. 2) along

the short diagonal, we have two equilateral triangles. So the perfect rhombus is made of two equilateral triangles—the equilateral triangle always centres in perfection. If we place two more equilateral triangles, by the two sides of one triangle of the rhombus, we get an equilateral triangle (fig. 13).

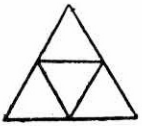


Fig. (13)

All these combinations show us that by putting them together or by breaking them down, we can compose figures. This is not a study in geometry, it is the mere observation of forms. The very long exercise, by which we combine and cut up certain figures is mental work. The child's movement and his active senses form the basis of this mental work. By combining these objects, by doing this work, the child organises his own mind. At the same time the activity is also an exercise for the hand, because he can handle the objects and move them about. As the child makes the combinations of figures, through the relation of size, he learns the proportional relations that these figures have among themselves.

Instead of giving the children toys, we give them these objects to handle. The form of these objects takes root in the child's mind, this is necessary for the study of geometry in later years. The objects incarnate the form, and relations of form in the mind of the child.

We begin to give these objects to children of three years and above. First we present the three basic figures — the circle, the square and the equilateral triangle in the form of solid wooden insets[1]. Then we present the figures in a graded series — for instance, circles in a series of sizes. The form is always the same all being circles, only the diameters of the circles vary.

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1. The geometrical figures are presented to the child by means of blue insets with knobs set in yellow frames, found in a cabinet with six drawers. More details can be found in *The Discovery of the Child.*

The objects allow the control of error because each inset fits exactly in the frame. If we make a mistake and put a smaller circle in the larger frame, at the end of the activity we will be left with a small frame, and a large circle which would not fit. The activity leads the child to reason. Every time this exercise is done, the child is made to touch the perimeter of the inset, and that of the frame. The inset is touched while it is held in the hand, and the frame is touched while it is on the table. After a while the child can establish that the inset corresponds to the frame merely by the movement of the hand over the inset. If the inset is bigger than the frame, the child recognises it at once by the feeling. With practice, the child can recognise the frame and its corresponding geometrical inset even with the eyes closed, by merely moving his hand over them.

This work fixes the attention of the child on the small differences of geometrical form and size. We also present a gradation, each relating to the square, but instead of squares graded from large to small we present a square followed by a series of rectangles which are graded in an exact way. The side of the square is ten centimetres. In the second, one of the sides remains ten centimetres but the other side is nine centimetres. It is very difficult to distinguish the second inset from the first because the difference is very small, only a centimetre. The next inset measures ten centimetres on one side, and the shorter side is eight centimetres. The series continues till the last inset which is equal to the half of the square, a rectangle which measures ten centimetres by five centimetres. Errors may occur. If the child puts the second inset into the frame of the square, at the end a square inset which does not find a place will remain. Many times the child is seen trying to persuad the square inset into a small frame by force. The material is a severe teacher. An adult might say — "Poor little boy! He is more or less correct. It does not matter. After

all the difference is only one centimetre!" However, the material forces the child to be exact, as it permits only the correct entry.

We present to the child, a series of polygons built in proportion; each one of them is inscribed in the same circle. They have successively five, six, seven, eight, nine and ten sides respectively. The frames are cut to fit each inset exactly. The hand goes once around the inset, and then once around the frame. It is not easy to distinguish these forms. In this activity, the child has shown an aptitude which surpasses that of the adult. Generally, in order to distinguish between an octagon, nonagon, and decagon, we count the sides. The child recognises the form without doing so. The child understands and recognises differences in form in a very surprising fashion.

We also have a series of triangles. We offer the child every variety of triangles. Here too the child touches the edges of both the inset and the frame. The differences in this case are easy to see. There are two equilateral triangles, two isosceles triangles, which have two sides equal and an acute angle. Of these the isosceles acute, the isosceles right-angled, the scalene right-angled and the scalene acute are placed in gradation, and presented in their variety.

So we have three contrasting figures. After the contrast, the gradations and varieties of the circles, square and triangles are offered in a series. So in the practice of these exercises the child also arrives at the distinction between the groups.

Next we offer an ellipse and an oval, figures which are very similar to each other. Both ends of the ellipse are equal while in the oval one end is larger than the other. However, the frame serves as the control of error. If the child tries to put the oval inset inside the frame of the ellipse it will not go in, and the same with the other. The exercise fixes the attention of the child. The material helps him to

register the small differences in his mind. We also give the child the trapezium, the parallelogram, a triangle with curved sides and a flower.

So the basic figures are presented to the child by means of touch, through movement, and the experience of positioning them in their correct place. In our schools, a child between three and a half and four years of age recognises all these figures. This is of extreme importance, because it is at this age that these forms become fixed in the mind of the individual. Placing an inset in a frame which corresponds to it exactly in form is of very great importance for fixing the attention, and for fixing the memory of the form. This material was first used for the education of deficient children, considered almost uneducable. We can can explain the differences in size and shape to a deficient child who may never understand. If however, the deficient child can handle an object, touch it and put it in an exact frame, and in the exact position, his attention becomes fixed upon the form. The difficulty in placing the inset into a frame which does not fit, begins to awaken even the reasoning of the deficient child. If the child touches the contour, along the perimeter of the inset, it seems to open the mind of the child as he is invited to learn the form by means of his senses. In the deficient child these psychological characteristics can be seen even more closely when he is able to use movement, and not merely sight, for recognition. We can understand how this rapid progress is very important in the child's development.

CHAPTER 24

The child's first step in geometry, was merely a sensorial step. We offered the child represention of geometrical form by means of which ideas could be taken in by sight, movement and touch. Now we can offer another material in which geometrical form is taken in only by the visual sense, so there is a passage from the earlier material — the insets which served the sense of touch, the muscular sense and the visual sense simultaneously — to these figures painted on cards which serve only the visual sense. These figures which correspond to the geometrical insets, are painted on the cards in the same size. In the exercise we look at the inset we have, and out of all the cards spread out we seek one which corresponds to it and superimpose it exactly on top of the card. If we make a mistake in placement, or in the choice of figure, the mistake is visible. The eye gradually becomes accustomed to recognising the identity of form between the inset and its representation on the card. If the child's eyes have been trained by repeated exercise, we can show him an inset and ask him to find us the card which corresponds to it.

In another exercise, we can place the plane insets on one side of the room, and the cards on the other side, show the child an inset on one side of the room, and ask him to look for it among the cards on the other side. This is an exercise of sensorial memory. So, in the first exercise in which the child had to put the inset into its frame, the

sense of touch helped the sense of sight. In the second exercise the child has to recognise and superimpose the inset on the card. This is more difficult because the frame is not there to control the error. The third exercise between the insets and the cards, is no longer a visual step, it is an exercise of memory. It is the memory which makes us recognise the form in drawing.

Besides these cards which reproduce the fully coloured figure, we have another series which reproduce the figure using thick outlines. Of course, these are more difficult to recognise. These exercises must be done one series at a time. Instead of giving all the insets and all the cards we may give the child only a few of the insets, only the squares or the rectangles, till in the end we can give all the insets and cards together. Many children may collaborate while doing this activity. When we look at these cards and try to recognise insets which correspond to it, we see how the eye exercises itself to seek the identities between all these forms! The same forms are also shown on cards in a very thin outline. Is it not a beautiful geometrical garden for the eye? To find orientation, here, one has to have a certain mental development with regard to geometrical figures.

The three sets of cards are placed in three different boxes, in the same order. Otherwise they would get mixed up, and the child would lose a lot of time. Placing the cards in order, constitutes an exercise of practical life.

The sensorial exercise with geometrical figures, makes the child more and more acquainted with their forms and yet it does not lead to mental fatigue. We show the child one application of the exercise, but the child invents many more combinations, giving rise to spontaneous activity on the part of the child. Without any doubt, the repetition of this exercise leaves a different impression of the figures on the mind of the child. When the child carries out these exercises, he is much more serious than an adult. Many

times we have seen a child touch the outline of the figure in the card. We asked him — "Why do you touch it? After all there is nothing there to feel. We only see a line. It is nothing like the wooden inset!" The child said — "No, I really feel it, I feel the line!" If we touch the card we can feel the line, because the paint leaves a raised impression. The child was interested in this delicate impression. So there is a very great deal of progress between the time the child needs the frame as a control, to this time when his perception is so delicate and fine, that he can recognise even a painted line by touch. A child who was given material in which the figures were cut out of paper and glued on the white surface, noticed the raised outline, and felt the limits of the figure.

If the child has time after time touched the contours of these different figures, sometimes the frame, sometimes the plane insets, sometimes the outline form, sometimes even blind folded, how many times the little hand has been around the closed contour! His exercise of co-ordination of the hand has been very prolonged, and very precise. Without ever having drawn or written yet, his hand has already acquired a great deal of practice in the delineation of figures. The hand has gone around the different figures, around sides which are sometimes short and sometimes long, around the different curves. The eye has exerted itself to recognise all the different figures and shapes. So the child's eyes and his hand recognise these figures together.

This exercise prepares the child for something very useful from a practical point of view. A hand which is capable of delineating a precise contour, and an eye which is able to follow the movement of the hand, is indirectly prepared to draw, and to write. The child's hand has become capable of limiting and co-ordinating its movements, around a shape, a figure. This is a hint that when the time comes for writing and drawing, the child will learn much more

easily. Also the child has become interested in geometrical designs, drawings which do not represent anything in the external environment. They do not represent flowers, or children, or cows. The attention of the child is fixed upon a line, and his hand, competently follows a contour, a close outline. After a while this child starts writing. What is writing but the capacity of moving round a contour, a drawing which has nothing to do with exterior reality, which does not represent a house or flower, but merely a figure. So by these exercises, the hand and the eye become prepared for the next step.

Every exercise in our method, not only has an aim in itself, but also has an indirect aim, preparing the child for something which comes after. We call this indirect preparation. So the work carried out around the Geometrical Insets fulfils the child's need for the organisation of the mind, but it is also a preparation for the future, when the child will have to write. In all the series of exercises, what comes afterwards is possible because the physical or mental organ has already been prepared by something that came before. Thus the whole progression of knowledge becomes unified because all knowledge is rooted in something which came before. When that which has come before, has prepared us for that which follows, the latter becomes much more interesting, and much easier. The preparation almost becomes an urge, a push forward. This is the first idea we have of the underlying unity of all things.

CHAPTER 25

Animals are in general covered by something which protects them — fish have scales, snakes and reptiles have a corneous covering, and mammals have fur. Yet the son of man is born naked, his skin uncovered and remains so. This leads us to believe that man is born with sensitivities instead of coverings. These sensitivities are closely related to the defense of man, to all the acquisitions that he must make, and closely tied to self-building. The conquests, the acquisitions that man must make through movement, through activity, they are tied up with the sensitivity of the skin in a special way. The fact that we are able to keep our carriage erect, to stand on our two feet and maintain our equilibrium, is due to the sensitivity of the soles of our feet. An illness which causes man to lose the power of maintaining the equilibrium, often causes him at the same time to lose the sensitivity of the soles of the feet. Many nervous derangements, losses of mental equilibrium, are always accompanied by some loss of sensitiveness. The sensitiveness of the skin, the muscular feeling, the muscular sense and the nervous system all form one whole.

Medicine has therefore, taken into consideration, this sensitiveness of the skin; its intensity is measured in every part of the body. There are special compasses with two points which can be adjusted to be together and to be separated. In certain parts of the skin, if separated points of the compass touch the skin, this separation is not felt; the

touch is felt as one point. If two relatively widely separated points are felt as one instead of two different touches, the skin cannot be sensitive. If instead two points very close together are felt as two distinct points of touch, that part of the skin is very sensitive.

Why must we study this phenomenon? It is to emphasise the fact that the skin is not merely the covering of the body of man but also an immense sensory organ, which is connected with the nervous system, and with movement. The men who always keep this sensitiveness are normal and healthy. Other men who lose this sensitiveness, also lose their health. Still other men, who through an unfortunate education have not been able to develop normal sensitiveness, are found to be lacking in intelligence. This sensory organ, when developed by its sensitiveness tends to keep the whole of the individual awakened by its activity.

Three parts of the body are specially sensitive — the sole of the foot, the finger tips and the forehead. They are not sensitive in the same fashion. For instance, the hand is sensitive to touch, the forehead more sensitive to pressure. If we stop to think about it, the most sensitive parts of our body are the forehead, that covers the brain, the harbour of thought, and the hand that works to know things. These two have made the civilisation of man possible over the centuries.

The skin is sensitive to many stimuli — to heat, to pressure, to the state of surface. What would happen if one stimulus became stronger and stronger? Can no limit, be fixed? At a certain point, if the stimulus no matter whether it is heat, pressure or texture, is too intense, it ceases to be felt as such. It is felt instead, as one unique sensation — pain. Thus sensitiveness ceases to operate when there is a feeling of pain. When this limit of pain arrives, sensitivity becomes a defense, as by nature, we run away from pain. On the opposite side of pain, is a constructive

sensitiveness, a sensitiveness which helps the building up of the personality. What happens if one stimulus became less and less intense? Can there be a lower limit? It would be a refinement of the constructive sensitiveness to be able to feel stimuli which are less intense. The limit of this refinement is only upto the point we can still feel. Beyond that point, the stimulus is not perceived as we are not conscious of the contact. Therefore, the most delicate feeling related to the consciousness, is the sensorial limit of consciousness. Scientifically this limit is the threshold of consciousness. The stimulus, in order to be a stimulus, in order to be felt, must be able to cross the threshold of consciousness. This becomes interesting especially in the education of touch. The education of the sense of touch, is to make it capable of perceiving stimuli which are less and less intense, thereby widening the threshold of consciousness. The hand is capable of taking in an idea, and the child takes in the idea through movements of the hand, through muscular feeling. He shows that he has the consciousness and memory of the things which his hand touched. Thus the hand and the sense of touch play important roles in the building of the intelligence.

The education of touch is of enormous importance, but it has not been taken into any consideration by educators. Many of the so-called Montessori schools have rough and smooth surfaced material, but they do not realise its importance. However there are two special types of schools in which the sense of touch is considered to be of primary importance — schools for the blind, and schools for deficient children. The results of the education of blind people and deficient people depends on the sensitiveness of the hand. If this sensitiveness of the hand is of such importance as to open the intelligence of the deficient children and blind people, we must conclude that it is also of great importance for the building up of the intelligence of the normal human

being. The normal human being is endowed with so many means, to build up his intelligence, that he is intelligent even without the education of the hand. There are many who have never had the benefit of the education of the hand, they have gone forward just the same. How much more intelligent they would have been if they had had this kind of education! Refinement of upbringing is brought about by the education of the hand.

The first step in this scheme of education must be to call the attention of the child to the sense of touch, through an important organ, his hand. These objects[1] have not been invented by me but are more than a century old. They were first used in the education of deficient individuals, considered to be absolutely hopeless, who were relegated into institutions to live like lost souls. These individuals were rescued by this study, by an education in which these objects were used to draw their attention and open their intelligence. On one side of the object the surface was extremely rough, on the other side was an extremely smooth surface; one of very fine sandpaper, and the other of very smooth glazed paper. The idea was to recognise the different surfaces by touching them very lightly. It is useless to talk to a deficient child, who does not understand if asked to touch the object. We cannot penetrate into his intelligence to make him understand, but we can hold his hand and pass it lightly over the two surfaces, and watch his eyes begin to wake up. What a wonderful secret — we start with his hand and arrive at his head. By making his hand pass over these two surfaces, we offer him the contrast between the two sensations.

1. Today this material consists of a set of four, collectively called the *Touchboards*. The first Touchboard is divided into two sections — rough and smooth. The second is divided into ten narrower sections alternating rough and smooth. The third materialises five degrees of roughness and the fourth five degrees of smoothness.

For the normal child, we also have a gradation of surfaces — rough, less rough, still less rough. We take the child's hand over the surfaces saying—"Rough, smooth!" By doing so we bring the child to recognise delicate sensations. This is the beginning, and the attention of the child is drawn by an object in an exact way. We should render the sensitiveness of the child more acute, by isolating the sense. We can ask an intelligent child, if he can understand, to close his eyes. We could also ask the child to use a blindfold. Now the child can touch the surface by himself, or we can help him to touch saying — "Rough, less rough, still less rough ...." When he is blindfolded without doubt he feels all these differences better. It is very curious, if we close our eyes we feel textures better. It is different from the way they feel when our eyes are open. The closing of the eyes widens the threshold of the consciousness. At the basis of every exercise, there must be something which arouses the interest of the child. The fact that these objects, offer different sensations when we keep our eyes closed or open, awakens the interest of the child in such a way that the child repeats the exercise again and again, always keeping his eyes closed. To arrive at this point, we tell the child to touch the object so lightly that he almost does not feel the sensation. On the other hand, by closing his eyes immediately, the sensitiveness is intensified.

I know myself, that by closing my eyes I have been able to feel minute but definite contours, while with my eyes open, I could not feel the same thing. The lighter my hand, the slighter the differences I can distinguish and the finer the sensations I can feel! The longer I keep my eyes closed, the lighter I keep my hand, the more items I am able to distinguish. This becomes for me an exploration. As this exploration becomes more fruitful in discoveries, the more I am capable of keeping my hand light, the more delicate is my touch, so that, I almost do not touch the surface.

Thus being able to keep the hand light, and delicate in its touch, and becoming the master of its weight, is for the child an enormous acquisition. It is a conquest which leads him to co-ordination of movement, an acquisition of great importance for writing. One of the difficulties the child faces in learning how to write is the fact that he has a heavy hand. So he breaks the points of his pencils, and the nibs of his pens; he makes the letters too heavy, and smudges the paper with spots of ink. He smears copy books and breaks fifty pens before he is able to produce something decent. All this, due to the fact that he can not keep his hand light. This exercise brings the child the capacity of holding the hand lightly over surfaces to perfection without putting any of his weight over it. Thus an exercise of physical refinement also has a practical side, preparing the child in the present for future intellectual refinement.

Here there are many pieces of cloth paired in texture. These, of course, are specially chosen — fine silks, and velvets are not lacking. Other cloths in different degrees of roughness and smoothness are also there. Preferably each of these different pairs should be in different colours. All these cloths are then mixed up together. The child puts on a blindfold, and by means of touch tries to find the two that are alike in the group. The pair is then placed on one side. This exercise is carried out in an orderly fashion. For the child, to be able to direct his own movement in the darkness, is to become the master of his hand. It calls for very great control over his own movements. Thus to be able to see with his hands, is most fascinating for the child. It awakens his interest in an extraordinary fashion. As these materials are of very vivid colours which differ from one another, the error of the blindfolded child using the material is made clear to him by sight, by the fact that two cloths of very different colours are together.

If we immerse our finger-tips in warm water, they

become more sensitive. It is also helpful when the finger tips are cold, but in India this is not to be feared. Drying of the finger-tips also augments their sensitiveness, if it is done by giving a brisk massage to the finger-tips. Thus the hand is even better prepared to feel. To the child, this is the most attractive part of the exercise of touch, which lends it an added interest. It also recalls the attention of the child to the exercise, helping him to concentrate upon it with an aim to be reached. In this case, the activity enables the child to feel finer and slighter differences. We can almost call it a ceremony which leads to a certain end of rendering our consciousness more wakeful, and more sensitive.

We could turn to a child and say — "Now come here and run your hand over this!" The child may turn against us, or the material may draw a defensive reaction from the child which in the end would not bring to the child the knowledge of refinement and sensitiveness at all. So the spiritual contact between the teacher and child must also be considered. It is necessary that we obtain the deep felt consent of the child before doing the exercise, so that he comes to it with an attitude of inner preparation, to conquer this exercise perfectly. It is not sufficient for us therefore to have the hand of the child, it is also necessary that we have his will. The will of the child is his consciousness of his senses. When these exercises are not done of the child's own will, they have no success, and are of no use. So the teacher must not only prepare the material but also succeed in establishing this contact. Without this spiritual contact, without the spiritual assent of the child and his eager collaboration, these exercises have no value at all. Afterwards, when the child has been initiated, he has the freedom to seek out these exercises by himself and by repeating them, he will augment his capacity to feel more and more. When we prepare the spirit of the child, we

open a way which was not open to him before, on the basis of his consent. The teacher may be prejudiced. She may say — "What? Must I teach only what the children consent to? Where is my authority, and my dignity?" We must understand however, that we can use our authority in many ways, but no one will force the child to do an exercise which he does not choose. Force will only awaken the disgust of the child towards the means of education given to him. By authority, which forces the child who is helpless, to do something we wish him to do because we are powerful, we put out a vital flame of light in the soul of the child. It then becomes impossible to make the child do these delicate exercises. We can never make the child more refined by using these methods. We must decide if we want the authority of the teacher to kill the spiritual flame in the soul of the child, a flame which will lead the child to perfection. These are two different orientations. The one which we consider in our method is that which helps the child to develop all that is valuable in him. A good teacher therefore is one who succeeds in opening the roads to furnish the child with the means he seeks, who can call down the spirit of the child.

CHAPTER 26

Some of these exercises done with our materials, are very delicate, yet at the same time they have a scientific basis. When the child chooses any of these exercises and repeats them, he appears to be calm and happy. When the child finishes the exercise which requires great concentration, though he has worked hard at it, he looks rested, and tranquil, even better than he was before.

The teacher must prepare these materials through which she gives the initiation. She must not use the children with the violent authority employed in traditional schools, but must ask the consent of the children while offering them this material. She must believe in the child, she must understand that the child loves to work. She must have in front of her eyes, the impressive picture of a child who when left free concentrates on work, who gives every atom of energy to the task upon which he concentrates, who wants to work when he rests, on holidays, when at home, even when he is ill!

We have seen, that children wish to be close to each other, and that they help each other. They wish to have good feelings, good sentiments. This is so far from what we experience in our social life. We cease to be free, when the concept of freedom is to be able to do nothing, to be free from work. When children enter into this intellectual life they lose their vices, they are no longer gluttons, they no longer want to eat more than they need! Without any

doubt, we have seen the reality in front of our eyes for so many years among children all over the world, of every race, of every country, of every social caste. Thus it is very easy for our schools to become the Kingdom of God.

What is described here, is not seen as commonly in the world as it should be because of the conditions the children are left in. Those who look upon the children in the wrong conditions do not see the truth. The child has the tendencies to be what I have described to you, but he finds great many obstacles in his path. The adult who has nursed the child tries to thwart the child from achieving inner construction, inner organisation. So the child resists, and becomes a rebel. Slowly he begins to lose that union, that link which united his spirit to his environment. It is absolutely necessary that this great intellectual energy within the child is joined to some form of activity, passing through the organs of his will, because the human intelligence acts through the active will of man. This great intellectual energy becomes manifest through the instrument of the activity, the movement of the muscles which is served by the will. If the child does not succeed in accomplishing this, the intelligence, which is the power of abstraction, which is the power of the creation of ideas, sails forth by itself and goes wandering into the world. The muscles which should have been organised in the movement remain free, in disorder and namelessness. The intelligence and the will which were meant to be united, to act one with the other, remain isolated, each going its own way. The mind of the child begins to wander, becoming fantastic in a disorderly way, going from one thought to another without aim, because it is a victim caught by anything nearby. The muscles which should have acted in accordance with the will have nothing to do, yet they must move. So we see the child grasping at everything, throwing things about, being disorderly, and noisy. The adults who see the children in this fashion

complain — "Children cannot fix their attention ... they cannot concentrate ... their minds wander ... they move in a disorderly way ... it is difficult to control them !" Given the above conditions, work, which requires a unity of the personality, a constructing mind, an aim, and an interest in something to be accomplished, is impossible. Without unity, without constructive will there can be no work. It is true that in these conditions the child cannot work. It is because we adults, have broken the child.

By preference, the senses which are at the surface of the development of the physical life develop, because with these senses the parents never fail. Everyday they make the child exercise. They feed the child regularly, in the morning, in the afternoon and in the evening. In fact, this is the only regular path in the life of the child. The poor mind, where does it find this order? It can never say — "To-day, I shall find stimuli by which I can develop myself !" The poor muscles made so active, so full of life, by nature, which need to be co-ordinated in order to become useful, are not guided by a very exact instinct, as is the case with most animals. For instance, buffaloes who need only wander, are capable of running from birth, they only need to be born in order to be able to run. The birds who have left their nests to fly, fly all their lives. They can do nothing else but fly. Each of the animals has within it an instinct for pre-determined action, an action which never changes. Man has nothing of this preciseness and exactness of instinct. He must build himself, he must construct his own activity.

So the child must build himself gradually, little by little, following the dictates of his intelligence and will. If this self-construction does not take place through the guidance of the intelligence, the muscles must yet move, but they move as they can. The will is not always guided by intelligence when it guides the muscles of the child, so the child moves about running here and there compelled

by the unguided will. The child exercises his hands, the greatest organs of intelligent man, the sensitiveness of the skin, and all the complicated organs of the human body, in the best way he can. He touches everything. This in fact, is one of the greatest fears of the adult. A child who wants to grasp everything senselessly, without any aim, becomes an active danger. Therefore the adult represses the child. We must understand that in stopping this kind of senseless action the adult does well for the child. After all, why should the child prolong in this fashion what can only be called a mistaken life? Unfortunately what happens is, that the disorderly movement of the child is taken up by the will of the adult, and the movement of the child obeys the will of the adult. Meanwhile, what happens to the child's mind? The muscles are controlled by the adult, but the mind goes wandering aimlessly from one thing to another without purpose, without intelligence, and imagines things. The adult notices that this wandering mind of the child is unable to catch hold of ideas, to grasp them, and become their master. It is unable to build anything solid. Later the adult controls the mind of the child, like he controlled the movements of his muscles. So the child, little by little, becomes persuaded that education consists of the adults continually controlling and guiding his movement and activity.

In this first period, the education of the child consists of learning good manners. He must obey, otherwise, we cannot live with him. We must teach how to behave. We allow the child's mind to wander, because we are persuaded that it is part of his life. We cannot catch the mind of the child, therefore he cannot be called upon to do serious work. What the child likes is to eat sweets, play silly games, and imagine all sorts of things. What he must do is to obey. The adult offers to do everything for the child because the child cannot do anything for himself. The adult gives way

to the child whenever he can. Yet life would be impossible if there were no repression. So we have a picture of a broken humanity. The child who is given an ever smaller degree of independence, by necessity becomes more and more dependent on adults. This type of child has a great attachment to his mother, or his nurse, or his big sister. He is afraid of everything, because fear comes when he is by himself. Within this child wandering in the darkness, his intelligence begins to understand that being good means merely to do what the adult tells him to do. The naughtiness, the badness of the child is only disobeying the adult. The adult keeps repeating to the child — "You are a naughty boy! Be good!" He actually means — "Do as I tell you!"

In the existing state of things, it is necessary to continue as we are. The remedy is not to tell the adult — "Now leave the child alone, leave the child to be disorderly and destroy all he can!" This is not the remedy. This is not freedom. The problem is not so easy to solve, its roots go much deeper. If the child has not been able to develop his own personality, then it is better that the adult directs his movements. If we were to tell the adult, leave the child free, let him be disorderly, it would be taking away from the child even the little help with which the experienced adult can furnish him. It is very difficult for the adult to obtain obedience. So often he has to use violence in order to obtain this obedience. Thus we have punishments and threats, all of which are necessary. The central problem is that the child has not been able to develop a naturally unified personality in himself. What we must do is to call back the wandering mind, the wandering intelligence, and fix it upon some object of the exterior world, upon an activity with a definite purpose — to call back the little bird who has flown away from its cage, into the cage that nature has given it, a cage furnished with precise activity.

Mankind has been placed upon earth in order to carry out means which are determined and exact. So that man may carry out his task in the world, it is necessary that his intelligence and his will become the master and guide of his mechanism. To form the personality — this is the crucial issue around which everything else revolves. Therefore, the task of education is to fix the wandering mind of the child upon an object. When we succeed in our aim, it is as though the child saw the object for the first time. He concentrates upon the object with such enthusiasm as though it was something which he had been seeking for a long time. He throws himself upon it, as though it were life itself, to form the unity of his personality which has been denied to him. It is as if a person who has been ill for a long time begins to get well. He begins to breathe the joy of unity, to feel the resurrection of its forces. The joy of the child explains his rested appearance after finishing work. Once the child has experienced this joy, he rushes into a series of exercises which build up his personality.

CHAPTER 27

The cutaneous sensitivity which is most important is the sense of touch. However, we pass through from the sense of touch to the sense of pressure very easily, if instead of touching as lightly as possible, we press our fingers on the object. This means that the sense of touch must always be accompanied by very delicate touch, as it is the sense of the surface of the object. Different objects of different weights give an impression of different pressures upon the skin. From the different pressures we may judge the relative weight of the object. This sense of pressure, we call the baric sense.

The material we prepare for the exercising of this sense obviously consists of objects of different weights. Here too we try to isolate the quality of weight, so we prepare objects alike in every other sense except weight. The objects, are little rectangular tablets of wood. We see that they differ in colour and weight. Why sc? This difference of colour has a purpose. The exercise with this material is done using a blindfold. The weight of these tablets is judged by the child, and tablets of the same weight are placed one on top of the other. If an error has been committed, it jumps to the eyes as soon as the blindfold is removed because of the difference in the colour of the tablets. Thus the difference in colour has the function of a quick control of error if any is made. At first the child can do these exercises with his eyes open, because after all the effort

is merely to feel the weight. Then, after he has exercised himself with his eyes open, he can bring the blindfold, and among the tablets mixed up together, seek the tablets which are of the same weight, collect them and put them into different groups.

First we can seek the dark tablets which have identical weight. However, there is a technique to follow. We must move the hands holding the tablets up and down to judge the difference in weight. This movement gives an added impression of weight. We feel the normal pressure of the object when the hand is going down, but when the hand goes up the pressure is doubled, so the impression is also doubled. When we try to remember the difference in weight between two tablets we get the impression of the identity between them. We can do the same with the white tablets which are very light in comparison to the others. By taking two white ones, one in each hand, we can feel their identical lightness. We can then once again, take two heavy ones and feel their weight. These exercises are done with the eyes open.

After the identities, the contrasts are taken. On one hand we place a heavy tablet, and on the other we place a light one and then change the objects from one hand to another several times. This is a sensorial study to appreciate the differences of weight, a true education of the baric sense.

We then pass from contrast to similarity, and the child tries to appreciate the difference. When these exercises are over, he finds the three tablets placed next to each other in succession of weight, the first is heaviest, and then the one which is in between, followed by the lightest. Initially he takes the first two in hand and tries to see the difference, and then the second and the third, and then the first and third and so on, going on changing the tablets and studying their sensation until he is perfect, making sure that he can feel

the differences of weight between them. This is a preliminary preparation, like the preface of a book. Meanwhile with his eyes he recognises those which are heavier, those which are medium and those which are light. Gradually he can recognise even a fourth grade of tablets. The second series of exercises are exclusively centred around the baric sense, without the help of eyesight. Six tablets of contrasting weight are first mixed together. Then the child puts on a blindfold.

It is important to mention that we cannot go to the child with a blindfold in one hand and say — " Now I am going to tie up your eyes! " The child will protest, and try to defend himself. He may refuse, even if we are gentle in trying to persuade him — " Would you like to blindfold yourself? " The best way is to blindfold ourselves before the child, and begin to do the exercise. When the child sees us blindfolded, he may say — " Let me try too ! " There is also another way. We can ask the child to close his eyes and do the exercise. After a while he may say — " I am tired of closing my eyes." Then we can say — " Here is the blindfold, put it on! "

How are we going to make sure that the child is really blindfolded, and does not peep under the blindfold? This suspicion arises from the old ways of teaching in which the child had to please the teacher, and obey the teacher in what she ordered him to do. Therefore, the teacher always thinks that the child wishes to hide something from her by some subterfuge. This activity is based upon the child's interest. This is the purpose of the exercise. If a child who is blindfolded keeps looking under it, what would be the use of the bindfold? He has done the exercise with the eyes open all the time! It would be better to do the exercise with the eyes open without the blindfold. The truth is that the child in a short time will no longer try to keep his eyes open. He himself will try to keep his eyes closed, to see if

he can do the exercise that way.

With the eyes closed the exercise is very simple. The tablets are kept mixed up in front of the child, and we tell him to put the heavy ones on the left, the light ones on the right, and the medium ones in the middle. First the exercise is done using only two contrasting series, the heaviest and the lightest. Later on, three or even four series are brought in, and the child makes as many little groups as there are series of tablets of different weights.

Children love to do these exercises! Once when I timed a child doing this exercise, he continued to do the work for twenty minutes. Thought accompanies the exercise. Is this light or heavy? This thought helps a great deal in the exercise. Usually when we commit errors, we feel challenged, we feel the desire to do it again and again to see if we can do it well. Indeed when many errors are made, children seem to want to continue the exercises even longer. We must remember that the exercise is not finished until the materials used for the exercise are put back in an orderly fashion, in their respective places. Each material occupies a special place in the room. So we have a rule — every object has a place, every object must be in its place. The blindfold must be put in its little packet, each of the tablets must be put in its respective box, and all the material returned to the shelf, so that, everything remains in order in the room.

The children are very scrupulous. They take instructions seriously and obey them to the letter. There is an exercise in which the child is given a sentence and asked to carry it out in action; the aim is to see if he undersands it. Once a child was asked to take a watering-can, water the trees and put back the objects used in their places. One child after watering the tree said — " I cannot put the water back in its place! " Here the error was committed by the teacher who gave instructions which were not precise. Every

child who wants to do an exercise, must go and look for the material in the place which it always occupies in the room. Never does one child take the material from another child, even if the child with the material has finished his work. This rule helps the children keep order in the room.

Another sense which belongs to this group is a combination of the sense of touch and the muscular sense. It is called the stereognostic sense. It is the sense that gives us the impression of form. So we see how the surface of the objects, the weight of the objects and the form of the objects have been isolated in the different groups of exercises. Of these, recognising the form of the objects using only the hands is among the most interesting for children, because it substitutes the hands for the eyes. Indeed it is the stereognostic sense which, in the education of blind people, substitutes eyesight with the hand. Many of the exercises which have been done before with open eyes, become interesting new exercises with closed eyes. For instance, here are these cylinders of the Cylinder Block, and three pairs of the cubes of the Pink Tower. The exercise is to find indentical ones and put them together two by two, or to build up three small towers using these three objects, with eyes closed. We may begin the exercise of the stereognostic sense, by finding identical forms. The greatest guide, is to find the identities, by feeling if two objects are alike. The one may begin with the eyes closed, to feel the objects, and find the differences among the series recognising the gradation merely by the stereognostic sense. It is not difficult to induce the child to do this kind of exercise, and when once they have started, all of them begin to do all the exercises with eyes closed. They even use the Geometrical Insets and the Cylinder Block with eyes closed! In order to satisfy the evident need of children to exercise the stereognostic sense we should give them special material with which they can work.

One of the exercises, is to put the hand into a bag of objects with eyes closed, recognise the object, and name it. This is the real play of the blind, to recognise the objects used in common life by their name by touch. Later on, it is done in a more refined way. After feeling the object, instead of naming it, we describe the object in detail. So the child takes the object from the bag, and describes it. For instance, he may say — "This is a ball of wool, not very well wound, it is soft to the touch." Or he may say — " This is a bottle made of metal, it has a cylindrical form but it has a neck, it has a cork but it is empty, and upon it there is a label ! " He has to describe the object as minutely as possible. We must understand how interesting it is as a game, and what kind of concentration is necessary for the exercise. When it was first introduced there were very amusing scenes of children with their eyes closed joyously waving their hands, saying — " I am blind. " There are exercises of the same kind which require greater concentration, with objects that are more difficult to feel, more difficult to describe — a key, a pod of cardamom, a fruit, a small wooden bowl. The teacher must know the small objects well, and while the child is doing the exercise tell him that there is still something more to describe.

The last series of exercises is very delicate. It consists of recognising very small objects. We can mix three different sizes of objects some rice, a kind of bean, very small peas. With the eyes closed the child must recognise the different objects, and sort out each kind on one of the three dishes in front.

I would like you to think about a child who does this exercise so minutely, continuing up to the end. Does it not seem to you that he is obedient to someone? Certainly, he is obeying his own will! In doing so he shows two virtues — constancy and patience. These virtues are necessary to continue and finish the exercise which has been

started. Thus the exercises carried out in order to make the senses more refined in their perception, also do something for the education of character. When child obeys orders in a traditional school, he does only one thing. In our schools children obey many inner orders everyday. In traditional schools constancy in the life of the child depends on the teacher. We all know that in life and in the education of character, to finish what we start to do, is of fundamental importance. Usually a person who is disorderly in his life, never puts things back in their places. As soon as he picks up something he will drop it there. He is practically of no value because later he will not have anyone telling him what to do. He does not finish what he has started. So his virtues depend on the orders of another person. He has no independent character. He has no patience, a virtue which builds character, very difficult to find in this world. We adults, in the common way of things, take all virtues upon ourselves. We think of how difficult it is for the child to be patient, we never think of the child who is patient. We see by the amount of time he spends on these exercises that patience is the very basis of the child's character. Indeed he does things so minute in every detail, that we adults have not got the patience to follow him up to the end of the exercise. In fact, many adults,who come to visit our schools who are interested in seeing the children work, do not have the patience to wait even for the few minutes which the children take to finish the exercise! We can transmit very little, but that is not the real problem. We must ensure that the child finds his own interests, around which his personality can develop.

CHAPTER 28

The child who finds himself in adverse conditions, may grow up in such a way that his intelligence is turned aside, and separated from his movements which go another way, each being independent parts without unity, each part growing by itself. When this happens the movements follow, not the will of the child, but the will of another person. So if some orderly movements are required, it is necessary that another being, separate from the child, puts them in order. In these conditions, the child has disorderly ideas and disorderly movements. It is difficult to keep the child's wandering mind still, and his movements are difficult to co-ordinate even by command. This explains the many varieties of characteristics of individuals in this condition.

Among children who have disorderly minds and movements, two groups may be distinguished — those who have strong psychic energy, and those in whom psychic energy is less strong.

A child who has stronger psychic energies, also has the strength to resist the adults who wish to dominate him. Such a child is also characterised by energetic muscular movements — he jumps on and over things, breaks things. The external movement of the child changes continually. Within him there is continuous mental activity. He is rebellious, strong and active, much admired by his parents who are very patient with his disorderly movements, who

say — " How full of life my child is! " A nurse who never loses her patience with the child and keeps smiling even when he jumps all over her is admired, and almost considered a saint. This child is naturally disobedient, and often manifests his psychic strength in fantasies, or symbols.

The other type of child is submissive. He knows how to obey when he is told not to do something but does not know how to obey when told to do something. He resists in a passive way. When the adult tells him to do something, he starts to whine — " I am so tired ! " Little by little, he slowly falls into an inertia, a form of non-activity in which he is always discontented. He is always unhappy because he is always bored, and looks as if he will start crying at any moment. The adult who cares for him usually says — "Oh, don't cry! Tell me what you want and I will do it. Don't cry. Poor little thing." So this child never wishes to be away from the adults. He finds accommodation in the fact that the adult does everything for him. This attachment of the child to the adult, for instance, in the case of a child who never wants to be separated from his mother, is taken as the love that the child bears for that adult. Adults often say of this child — " Oh, this child is so affectionate, so loving. Such a lovely soul, such a lovely spirit ! He cannot stay away from his mother or big sister or big brother even for a minute! " His parents say — " What a good child! He loves us so much."

These are not normal characteristics of childhood. In fact I have called them deficiencies. However these are the characteristics parents admire, encouraging them in their child, calling them either intelligence or goodness.

The passive child is more tyrannical than the child who mentally takes refuge behind his fantasies, because he begins to take advantage of the fact that he has an adult to do everything for him. He does not do anything for himself but tries to take as much as he can from others. He

knows how to ask, either by crying or by being affectionate. The adult, either to console him or in the joy of being loving, gives in to everything the child wants. This child's demands have no limit. The mother says — "Do not make the child cry! He is so good!" He is given everything. Finally, it is impossible to satisfy his demands. In our country, we call him the child who asks for the moon. He is impossible to please, yet a good mother will try to satisfy him, no matter what sacrifice she has to make. We say of her — "What patience she has! She is always so sweet, so loving. Such a wonderful mother!" When such a mother hears a lectures on the freedom of the child, she says — "I never go against the will of the child. I sacrifice myself for him." The result is that things go from bad to worse. Who is held responsible? The terrible Montessori method of course! So the father says — "You must restrain this child." Another adult says — "I try to be very severe with my child, but when he is impertinent, I really do not know what to do with him!" Another says — "I do everything for this child but he is so disorderly. I really do not know how to make him contented." Each adult uses a different method, but the result of both kinds of treatment is about the same.

The ordinary child, the child everyone sees around, is not the child who is constant in his work, concentrated, and orderly. The ideal child is only a dream described by Dr. Montessori. Looking around we see disobedient, bad, and apathetic children, who do not want to do anything for themselves. Among the two general types of children we find a great many different variations.

A vivacious child who prefers mechanical toys, as soon as he gets a toy, breaks it. His mother says — "How intelligent he is! He wants to see how it is made, so he opens it and breaks it." What has really happened, is that these toys no longer amuse the child. There is great

joy at Christmas when child is given all kinds of toys, but after a few days, he puts them aside, and there they are left.

The apathetic child is just the opposite. He is is very affectionate with his toys, prefering woolly bears and woolly dogs. He is greatly attached to them, and always has them in his arms. He hugs them, and always wants to take them to bed with him. He is attached to everything near him, to his nurse, to his mother, to his toys. When everyone is dressed and ready to go out, he has to be dressed, and when he gets out in the street, he begins to cry — " I want my bear." So someone must go back and bring the bear so that child may clutch it in his arms. These are little dramas of everyday life when we are blessed with such a child. No one can say that such a child is a great worker, a teacher of men.

Of the two, it is more dangerous for a child to be apathetic, than to be rebellious. Even the blindest adults say of the rebellious child — " He is a devil, but he will make his way because he is sure of himself! "

The submissive child is in real danger of having his will substituted by that of his mother. This substitution of an individual's will by another will is called suggestion. The child by not doing anything, is a victim of suggestion. For instance, the nurse says — " Do not get up from the chair!" The child does not do it. This in itself is not so bad, but the difficulty is that the command of the nurse remains inside the child. So even if the person who has commanded him is not present, the child remains under the suggestion of the will of that person.

Once there was a child who liked to water flowers in the garden. Of course her nurse was afraid that when the child opened the tap she would get wet, so she said to the child — "You must not open the tap." Later, this child went to the garden with her aunt, and said — "I would like to open the tap and water the garden." Her aunt said — "All right! "

The child replied — " Nurse does not want me to ! " The aunt said — " I will give you permission." The child went to the tap, and put her hand on it. Then she moved away because the command of the absent nurse was still too powerfull to be disobeyed. The will of the nurse still commanded the child.

Many times, we can see a child lost in thought, get up from his chair, take a few steps towards an object he evidently likes, and then all of a sudden stop as if coming to his senses, turn round and go back to his seat. This child is usually obeying the command of someone who has told him, never to get up from a chair and never to touch objects. This command which functions inside the child, this will of another person within the child who already tends towards inertia is very dangerous.

It is very strange, that most of the commands given to the child, by the adult are not to do things. No adult says to a child — " As soon as you get up you must dress, and wash." No adult commands a child to do something, because no one thinks the child capable of doing anything. They have no confidence in his ability. The commands that are given are only to ensure that the child does not disturb the adult. In order to do something, the child must know how to do it. He must have had a certain amount of practice. No adult can command a child to do anything, because if he attempts to do something which he has never done before he would not be able to do it.

This is more or less the situation in which every child in the world finds himself. However there are certain differences between children belonging to poor and rich families. Children belonging to poor families have occasion to be active, therefore they often have a better character. The children of rich families are helped to do everything, they never have occasion to do anything. When poor children come to our schools and are given our material,

they are immediately attracted to everything. In their homes they have nothing of beauty, nothing attractive. The rich child who has occasion to see all kinds of things, who is buried in the toys his parents give him, looks at our material with a bored, snobbish expression, with a kind of superiority. We do not know what to give this child as he already has everything. When this child comes to school and sees the objects to be handled, he looks at them with indifference and despises them. This is perhaps the only advantage of being poor, because poor children immediately make great progress in our schools. The rich child is very difficult to work with. This makes us understand one of our Christian sayings better — " It is difficult for the rich man to enter the Kingdom of Heaven." Some rich parents who have sent their children to our schools have understood these defects in their children. One such mother said to me — " Do not abandon the poor rich children ! "

When we open a school, it is not the child who works with concentration, constancy and patience who comes to us. It is the children described earlier who come. The first period of school can be used for the correction of these universal defects of childhood. Real treatment is necessary, just as it is in a sanatorium, before this kind of material can be given to the child with any advantage. Otherwise we find that an imaginative child who lives in a fantasy, who is vivacious and energetic will use the wrong muscular movements, jump over the Long Rods, and run through the room, whipping the imaginary horse he has between his legs, making him go faster and faster. Or if we give him a Cylinder Block, he will attach a string to the knob of a cylinder, and run around the room dragging it behind him. In everything he will see something else. In the Pink Tower he will see houses, and people who talk to each other. He will put the Buttoning Frame around his neck, or make it walk. The mind of the child is wandering in its fantasy.

Every object the child sees becomes an instrument, for his fantasy. So the mind wanders on in a disorderly fashion, dragging behind itself these new objects which have been put at its disposal. If the mind of the child cannot be fixed the actions too follow the fantasy.

There is an other type of child who needs help. We must try to make him do something. He is always undecided. This indecision arises from the fact that the child is inert, and has no desire at all to do anything. When the child first comes to school, he starts screaming if his mother goes away. He wants her near him in class and keeps looking to see if she is there. If the mother has something to do at home and is anxious to go she looks to see if the child is all right. The child looks to make sure that his mother is there. There is a sort of match between the mother and the child. The mother looks anxiously at the child saying — " My child cannot live without me." Some help therefore must be given.

Many people question us about freedom — " What do you mean by the freedom of the child? Why should not the child play with the material? Where is the freedom? Why should he not fantasise? Why should he not imagine the Long Rod to be a horse, or the Buttoning Frame a necklace? What a wonderful inventive mind! Let him use his mind imaginatively if that is what he wants! ".

Many people believe that the child's fantasies are his means of developing his imagination. This is not so. The child's imagination is already very well developed. These fantasies do not help to develop imagination, but merely serve to allow the imaginaton to be dragged behind these objects. The imagination, the magnet which attracts all these objects, is attached to a mad horse which trots off with these things attached to its tail. The questions about freedom continue — " He does not want to do things, and you make him do them. Where is the freedom? This

child is so affect nate, so loving, and you want to take him away from his mother!"

So the picture which presents itself, is a picture of a child not yet able to unify his personality. We must respect this state of things, and really start a treatment which will bring about its correction.

CHAPTER 29

When children come to our schools, they present a number of characteristics which are considered normal in childhood, although these characteristics are often abnormal. We must carry out a thorough examination of these facts, just as we did with the senses, by analysing the defects into their elements, thus clarifying vague statements which lead to confusion.

Let us consider imagination. Without doubt imagination is the grandest, most stupendous part of the human mind. We can say that imagination is like an amplifier, or a loud speaker. For every impression which hits the mind, the imagination builds up around itself something greater. We call this imagination *city of abstraction*, a creative place, where all symbolic images, are created. The symbols arise as a synthesis, because the imagination is so great, it needs to unite groups of images into symbols. We recognise the existence, the greatness and the importance of the imagination, so it would be absurd to go against it. The other characteristic is goodness. The good child who is always attached to his parents and to everyone around him, who is very quiet, gives no trouble, and is very obedient, is moving towards inertia. The adult never knows the child to do anything. The adult always imagines that the child is very good. The adult misjudges the vivacity of the active child, who likes to run and jump, because that in itself is a sign of life. The adult says — " I am proud that

my child is so active." We do not deny the goodness in the child. We do not deny the power of obedience, nor do we deny his attachment to his parents. We certainly do not deny the child's active nature, or his intelligence. How ever the adult often confuses these great qualities of imagination, vivacity, goodness and love with other wrong, false characteristics. It is very necessary for us to understand that when we speak of imagination, or goodness we refer to things other than those understood by adults describing these defects. Therefore these words are shrouded in confusion. It is necessary therefore to make an analysis of the characteristics of the child, and to understand his nature clearly.

Generally, the child is unable to realise the unity of his personality, because the adult interferes making it impossible for the child to act alone. The adult does not stop to think about whether the child's actions are good and formative, or bad. He just stops the child from being active. So the child grows up surrounded by a series of commands, by orders which are of a negative nature. So all these characteristics of the children are on one level, negative, denied action. Two types of children have resulted from this. One is the vivacious type, whose mind has developed by itself apart from movement, whose movement has developed itself separate from the mind. The mind of such a child certainly has all the characteristics of the human mind, and therefore it is imaginative, but it lacks the capacity of being able to fix itself upon someting in the external world. The capacity of the mind to fix its attention upon something, is the very basis of mental development. A mind which cannot fix its attention on an external object cannot direct an action upon it. The inability to direct an external action also causes the inability to logically organise normal external movement.

When a child enters our school, we expect him to be

able to concentrate upon an external object, and carry out a useful action with it.

It is as though we have a cage in the room and a little bird escapes from the cage. We leave this cage open for the little bird to come back. When this little bird which had escaped from its cage, comes back into it, then our work begins, and our aim begins to be reached. We may say — "What? Must we put the spirit of the child in a cage?" Nature, or we can say God, who gives to man this great spiritual energy also gives him a body, so that he may act. The purpose of this great energy, is to move the mechanism which has been given to it. That which is put in a cage is not the spirit — it is life. We may say that this is against the idea of freedom. We can also ask — "Are the stars not free? They have to move in their orbits. Perhaps the trees are not free! They are obliged to keep their roots in the earth! The fish are not free, they cannot leave the water." There is a definition which creation sets for different forms of life, a certain set of rules that we cannot change. The child has a body, and this body has organs of movement which must obey the spirit. This whole, of spirit and body, is placed in relation with the environment. Upon this, no discussion is possible. This is life. This is nature.

So when a child who is disorderly in movement, who jumps about and breaks everything, who is very noisy, and speaks in a very loud voice, comes to our school we just wait until the child's attention becomes fixed upon an external object.

When the other type of child, the one who has thousands of attachments, who takes advantage of the condescensions of others, who is always still, and never moves, comes to our school we wait until a certain activity awakens in the child, and is brought to bear upon an external object. The best way of clearing up this muddle, is to speak of facts within our experience — to speak of the characteristics that

children present when they come to our schools, and of the characteristics that they assume, after that they have been in our schools for a certain time.

There are certain children who will not do anything whatever we may put in front of them, because they have become paralysed, because they have resigned themselves to inactivity. From this passive, inert child we pass to the child who is extremely timid, who does not have the courage to do anything; he is always afraid of making mistakes, or doing something wrong, he cannot but imitate someone in his family, in everything that he does. This child, lacks the personal urge to do something. There is a barrier in front of the child, which prevents him from being active; a barrier formed by suggestion, by extreme timidity, by lack of confidence in himself and a fear of committing errors. Therefore, the child has a great desire to have his mother, or nurse, or at least his elder brother or sister present.

We must be very, very careful not to do what already has been done to the child. The child has always been told— "Don't do this!" In school we may say to the child — "Do not always hang around your brother!" If we do so, we start by using negatives. We must act so that little by little, this child acquires the courage of his own individuality, and begins to be active. Sooner or later urged by a personal impulse, he begins to act by himself, thus coming into contact, with an external object.

There was a small child who followed his elder sister continuously doing absolutely everything that she did. If the elder sister went across the room, the smaller child naturally followed her, if she went out of the room into another room, he followed. The elder child became accustomed to this. No matter what she did she took it as a fact that the little child would do it too, however difficult the exercise for the little child. She would say — "Whatever I do, he must do also!" One day, the little

child became interested in an exercise and began to work at it. It was the elder sister who began to protest — " I am working here, but you are working there all alone with something else ! " From that moment the little child began to take an interest in other things, and his personality began to develop.

One mother had always to be in the school of the child, because the child would not hear of her going away, immediately protesting and attacing himself to her skirts in order to go with her. One day, this child became interested in an action. The mother saw that he was interested in his work and asked the teacher — " Do you think I can leave him now? " The teacher said — " Well, try it! " The mother said — " Oh, I want to say good bye to my child ! " She went up to him and said — " Good bye, Jimmy ! " Jimmy looked up and said — " Good bye ! " He became detached from his mother and began to work.

Another child remained absolutely inert. He sat at a table and did not take part in any work at all. He only looked around, with great timidity to see what everyone was doing. It was believed that he could not talk. One day, the teacher saw this child get up in order to go and fetch an object. She said — " Oh, how glad I am ! What a good little boy ! " The child looked at the teacher, and scuttled back to his seat. For one whole month he did not do anything else. It was necessary for the supressed courage which was being born, arising from his personality, to be left alone to act, without anybody taking notice of it. When after one month, the child again got up and started to do something, nobody paid the slightest attention. He worked and worked for a long time. The child who had never talked before, began to talk and work.

There was a child, almost a pathological case, who was afraid of taking a glass full of water in her hand. Why did she have this kind of fear? Perhaps, when she was very

small, someone had said — " Oh ! Be careful, don't take that glass of water. You will spill it, and the glass will break!", Perhaps the child received a kind of mental shock, that was the cause of this inaction. Certainly no one had forced the child to touch these glasses in the school. On the contrary, no one had noticed that the child had this kind of fear. After some time, the child became interested in the children who were working or doing exercises with water colours. She began to carry glasses of water to them. Then, a kind of passion was born in bringing glasses of water to those working with water colours.

Thus the child literally needs to be cured of these mental barriers in order to become normal and active again. All these defects of the child, all these barriers that were an obstacle to his development, were not destroyed by a direct action, or corrected by personal encouragement, but disappeared by themselves when the children became spontaneously active. Thus by becoming spontaneously active, each child overcomes the barriers to his development, and returns to normality.

When an active child endowed with great imagination, and full of disorderly movements comes to school, he uses the materials to make carts and horses. He also continuously disturbs those who are working. However once this child begins to work, and fixes his attention upon an external object, or on an exercise, he becomes calm, and all these flights of imagination seem to disappear. He becomes orderly and exact in his movements. The wandering imagination seems to return. We might say, that correction has taken place. The bird comes back into its cage. It is really at this point that the work of the school begins. It is at this point that real development begins.

How long does this correction take?[1] It all depends

1. This was a question raised by a student in the course of this lecture answered by Dr. Montessori at length.

upon the child. Sometimes it takes a week, sometimes a month, sometimes even a year.

In modern medicine, in the field of psychology, there are children who are called difficult. Once such difficult child was locked into a room with a certain number of objects, while the doctor watched from outside the room through a glass, (the child did not know that he was being watched) waiting for the child to act. When the parents came back the doctor did not describe or explain what happened. He only said — "The child is cured!" The child was taken away from the pressing care of the anxious parents and was placed in relation with some external objects, and became active with them. His activity became normalised. This is the cure. Medical sanatoriums of this kind are very numerous in our country. Whether these institutions came after the Montessori method I do not know. It does not matter. However our schools are much more perfect than such medical institutions, because they represent the place where the child quietly puts his activities in the right place. When this happens, and the child becomes normalised, we see that the defects of the child disappear. You may say to me — "It is all very nice, but in actual practice, what do have we to do? Sit and wait with all the objects in the room?" In speaking of the child first deviated, and then normalised. I have told the teachers what they should expect. In the meanwhile it is of great help that there are several children together in the same class, more or less of the same age. When the children are many and the teacher is only one, there is not an adult for every child as happens in the homes. This does not mean that it is always the only child[1] who has more defects. It has always been thought that the only child has more defects than others because his parents are too good to him. These defects, however, are often due to the fact that all the adults in the house are

1. A child without siblings.

on top of the child. The mother takes care of him, and stops him from being active, then there is the father, the uncle, even the grandmother and grandfather all on top of one poor little child. Instead, if there are a great many children in the family, they are more normal because the parents have not time to occupy themselves with each one of them with such intensity.

So the conditions in a class in which there are many children and only one adult, is favourable to the child. Most of the children have defects, but the defects are not so greatly developed. A certain number of children are able to follow the teacher and do some little exercises. Those who do not follow the teacher are left alone.

The material is not given to the child when the school is started at first. The teacher should study the group of children, and organise some collective actions to call the children little by little to order around her. I cannot give each teacher particular advice as to what she should do to achieve this. I can only describe what has been done with success.

For instance, one teacher filled up a soup dish with water and said — " Let us see if any one can carry this dish without spilling the water ". Almost always the children became interested and took extreme care not to spill the water. In doing so they begin to fix their attention upon an action which has a certain external aim.

In our country we have a great many chairs in the clss. So the teacher said — " Let us take all the chairs and make a straight line with them." Each child begins to make these lines, and the teacher the shows children how to hold the chair, how to carry the chair, how to put it down without any noise, or to run from one side of the room to the other without making any noise. One teacher told each child to hold on to the apron of the other, and make a long line, in order to walk together in the garden. When the teacher

sees that the moment for work has come, the exercises of practical life can be started. So school actually begins with the exercises of practical life,with some analysis of movement. Sometime during the collective stage of the class, the teacher can also sing songs, tell stories and give the children some toys. All these things represent a call to the child. When the exercises of practical life begin to interest him he has concentrated in relation with the object, and will seek similar work. When the teacher presents an object for the exercise with all its details, in all its completeness to the child, the child becomes acquainted with these actions. So little by little, the child begins to work. When the personality becomes normalised, and develops to a point where the child begins to fix his attention deeply upon something, the material is taken out and presented to the child. This is when a new school is started. In the case of the child who goes to a school which is already working, he enters an environment in which the work already exists, in which the other children are already normalised. So when the new children have become normalised, when they have begun to work upon an object, with their attention fixed, the school begins to function.

Our schools are not sanatoriums, although at first the work we do in our schools is parallel with that which is accomplished in a sanatorium. The important part of our work is the education of the child. The aim of the school is not to help the child to fix his attention upon an object — that is only the beginning. We do not stop there. It is from that point that real education, the real work of the school starts.

CHAPTER 30

Colour is a quality which is entirely subjective. Colour does not exist externally. It does not belong to the environment. It is a phenomenon, a play of the light rays. When there is light we can see colours, when there is no light we cannot see them. A solid object, can be handled whether there is light or not. Darkness does not change its form. The same is true of music. We can hear it in the darkness and in the light. It always has the same sounds. The same can be said of taste and touch, they remain what they are any hour of the day, or night. It is not so with colours. In order to have colours we must have light. If we have artificial light we can see colours at night, but the colours change in artificial light. So colour is something which fluctuates, which is not fixed. There is no absolute in colour. It is therefore the sensation which is most sensorial.

It is interesting to think that colour is so closely tied up with light. If there was no artificial light, we might say, that colours exist only in relation with the sun. However it has been discovered that light is like a skin which covers the earth's surface. If we go beyond the earth's atmosphere, the light disappears and there is only darkness. This is very striking, because we would imagine that when we get away from the earth and nearer the sun, the light would become more brilliant. So light is given to those of us who are upon the surface of the earth, as a gift. Even in the depths of the ocean, there is no light. It is known that the fish and the

animals that live in the depths of the ocean light up their own lamps just as we do here at night.

Colour is evanescent, yet it is necessary not only to distinguish, but also to enjoy things. Scientifically, the study of colour is very difficult. It requires the most refinement, and the most finesse in the study of physics. In Austria, at the university level, the study of colour has become a branch of scientific study.

Colours are easily mixed among themselves. There are so many shades, that it is as difficult to distinguish a pure colour, as it is to distinguish the pure type of race in our days, when humanity has become so mixed. The principle according to which the material is made helps the child to find orientation in this vague and complicated world.

There are certain colours which are fixed, clear, exact, and precise, which have been given as models — the colours into which the white ray of the sun divides itself when analysed. We see this many times in the rainbow which appears in the sky. With scientific instruments, light can be divided, and then we can see all these colours. There are the limits of sight, the span of colours that our eyes are capable of perceiving. We know that on one side the rainbow finishes as violet, but beyond that there are other colours which we cannot perceive. In nature too we see an immense variety of beautiful colours, in the flowers and trees for instance. So these rays give our eyes the impression of colours, only within this special range. Yet within these limits, what richness! What a wonderful land of colours we are capable of perceiving! Colours arouse our emotions. They give rise to pleasure. At the same time, our eyes can distinguish the harmony between these colours, finding those which do not clash but combine. Therefore, colour is an element of immense importance in the aesthetic world.

An education in colour is really essential, therefore

we begin by giving the child a small beginning in this education. The material employed to present colour to the child, are coloured tablets of the same size, which are painted in different colours. Varnish and paint however do not offer that brilliancy which is necessary to impress the colour upon the child. Therefore, we must look about us among the materials at our disposal to find one which is best suited to the presentation. I believe that silk thread is the material best suited to presenting colours. The silk thread must be would around the tablet, and the tablet must have frames at both ends, made of two pieces of wood. They serve as the handles, so that we can hold the tablet without touching the coloured part with our fingers, without soiling it.

It is very difficult to prepare this material because both in the outer industrial world, and in the inner world of nature there are many colours. The material we offer should be accurate, encompass what is seen in the outer world, and enable the child to bring order to the mass of colours, so that he may make distinctions upon a fundamental basis. This part of sensorial education is the most important. The material must be delicately and scientifically prepared. We offer the child this material as an orientation in life, because colours are attached to objects and to living things.

For an orientation among these colours, we must know that three colours can be distinguished as fundamental — red, blue and yellow. So we begin by preparing a material which has these three fundamental colours. However, for pure yellow, we cannot present orange which is a mixture of red and yellow. The red tablet must not be dark red. The blue cannot be so dark, it is almost black. These are mixed colours. They are not the ones which should be given to the children. The material prepared, should present reality in the truest possible form. If we were to give any colours which more or less resembled these colours, it would be a misrepresentation of the three fundamental colours — red,

blue, and yellow. Then perhaps the child would only visualise in his mind, the shades which we present to him, rather than the true fundamental colours. Instead, we must serve the child, by giving him certainty in those things in which he cannot arrive at securely by himself. In the world there are so many shades of yellow, so many shades of red, and so many shades of blue. To say that this is the fundamental blue, this is the fundamental red or fundamental yellow, we must carry out a scientific study, determining the exact colour through the analysis of light.

After we have used the material, we enclose the colour tablets in a box. We do not leave them in the light, as the colours may then be altered. We must take all these precautions because if we do not take care of the material, we may as well not prepare it at all. We might as well let the child see the beautiful dresses of the ladies on the street or the beautiful colours of the flowers in a garden.

In the presentation of the material, in the usual fashion, we seek identities among contrasts. The contrasts are chosen in the three colours very distinct from one another — the three fundamental colours blue, red, and yellow. These tablets are mixed together at first. Then we identify the ones that are alike. These colours are easy to distinguish as there is certainly no psychological difficulty. So we can take advantage of this to teach the child the mental technique of taking the tablets by the frames and placing them together, one next to the other. In this way, the child can establish the identities, and compare them. When a pair has been identified, the two tablets which are alike are placed next to each other with their corresponding frames touching. The child has it in his nature to repeat the exercise mixing the tablets up and putting them together, day after day, again and again, so that he has these three fundamental colours before his eyes for a long time. So these three colours remain fixed in his mind, printed and impressed there.

People say — " No, let us not put them side by side, let us place the two identical tablets one above the other! " Or they say — " Let us place two pairs one next to the other, in the same row instead of one beneath the other!" They feel that by using the tablets as he wishes, the child will experience freedom in the use of colour tablets.

It is logical to place two identical tablets next to each other so as to be able to judge their identity. If we put them together side by side with one frame of each tablet between them, we put an obstacle between the coloured parts of the tablets. Instead, in the way I described the eyes pass from the surface of one to the other without an obstacle in between. If we put the pairs side by side in a single row, the same thing happens. The three pairs of colours, are no longer isolated and the eye passes from the yellow to the red without any interruption, or separation. Instead if one pair is placed above the other there is a separation. As we pass from the identities to the contrasts, we must place the material together in such a way that it will best offer the impression we wish to give. We do not speak here of the child who chooses colours to make stairs, or drawings or houses. If the idea is to build stairs or houses, why all the scientific care in choosing the colours? If he is going to build houses, we can give him bricks instead. We would then be forsaking our intention to give to the child something exact, true, and in its purest form.

Our aim is to give the child, a superior kind of help to help him acquire clarity in his mind on the subject. If we depart from this aim, any colour, any material, and any way of handling the material will do. All the things we offer to the child should serve his mind as keys which allow him to open the doors of the universe which surrounds him. Just as we make keys with little ridges, little teeth and little turns, with all kinds of small details, so that only that key with all its special details can open that special door, here

too, all the details of the careful preparation are necessary to open the door of the mind. If we apply the same idea of freedom to the making of a key, we need not make it with ridges and teeth. Then we will be absolutely free to make the key as we like, but when we put the key to the door, we will not be able to open it.

Thus with the eleven pairs of colour tablets we could almost make a sum with colours — red plus blue makes violet, yellow plus red makes orange, blue plus yellow makes green. If we mixed these three colours well, we would get white.

If we took two sheets of transparent paper, one paper coloured pure blue and the other yellow, superimposed them, and looked through them at the light, they would give the impression of the colour, green. If the transparent papers, were red and blue, they would give the impression of violet if held against the light. If we held transparent papers of all three colours one over the other, to the light, we would get white. All the seven colours of the solar spectrum are derived from a combination of the three principal colours. However if there is a prevalence of one colour for instance, red, we get an impression of the colour pink. If we mix the three colours with a prevalence of yellow, we get brown. If we mix them with a prevalence of blue, we get grey.

Let us go on to the combination of these colours — for instance, the combination of red and yellow which form orange. The colours must be carefully prepared, in their exact shades. Only then can we mix the two colours in proportion to offer the purest shade of orange. We can place the three colours in the form of a star, and then place the colour which results from the combination of two in between.

So first we offer the three fundamental colours. Then we offer three combinations of two colours each. Finally

we offer three combinations of all the three fundamental colours combined in different proportions. Together with white and black, which are all colours together, and no colour at all, there are eleven colours. All the eleven colours are presented in their clearest, purest form in pairs. In the exercise, the tablets are mixed up and the child takes any one of them, and then he looks for an identical tablet from the assortment in front of him, and then he places the pairs one under the other, until all the pairs are identified. With these colours mixed together, we can make all the various colours that exist in industrial production and also in nature. From these key colours, we can understand the combinations, and how the colours in nature, and in our environment, are formed. These colours form the basis of all the colours that are possible, we can make different combinations according to our individual inclination. In the face of this infinite variety, it is necessary, that we should help the child, by extracting those colours that are fundamental and offering them to him.

The last step is to find the relation of colour with respect to each gradation and shade, with respect to each colour. For instance, we have here, a gradation of the colour pink, from very pale pink to very dark pink. We try to offer seven or eight shades for each colour. These colours should be relative gradations of the same colour and not combinations of other colours.

In this connection, we must mention Professor Ostwald, a professor in the University of Vienna, Austria. He made a special study of colours, and prepared all the purest shades of the different colours, isolating them from all the others. The colours were printed in the form of a booklet. The Ostwald colours are now used in all industries, and art schools. He has helped us to see the beauties of graduated and graded colours. By the mere superimposition of strips of paper prepared from the Ostwald colours which are so

perfectly pure, we can reproduce the pink of the cheek, all the natural passages of colour that one sees in a sunset or sunrise!

The child is given seven or eight gadations of the nine colours mentioned, chosen in their purest form, except of course white and black! The exercise is to place the gradations of one colour mixed up together, then place them one next to the other according to the intensity of the colour of each tablet, first the very darkest, and then the next darkest and so forth.

This presents a certain difficulty because it is sometimes difficult to distinguish between two shades which are close in intensity. Sometimes we see errors that the child makes in placing the shades in gradation, but very often we do not see the errors at all. If we do see the error, but the child does not we can only try to make the child understand that he should start with the darkest and then place the next darkest and so on, from darkest to lightest. If the child does not see the difference, what can we do? If we start suggesting how to place the tablets according to the difference in intensity, and the child does not understand and thinks that two tablets are alike, no matter what we do to correct the child, he will not be able to see the difference. However, sight can be educated by exercise. As we know, the child has the desire to repeat an exercise. After a while, through repetition, the child sees those shades which he did not see before. If we correct him, we humiliate and discourage him. So the only way to correct the child is to prepare this material and to give him the technique of the exercise. If we give him the technique, he will develop the ability, and attain that development which he did not have before. This is sensorial education.

CHAPTER 31

We do not begin school by giving material to the child but by preparing a peaceful environment around him. In those first moments when school begins, the teacher should do what her common sense dictates. The teacher's aim is not to teach the child to do the things which she is doing. She does these things while waiting for the moment when the child will become interested in working with an object. There are important collective tasks that the child can do, for instance, lifting and carrying a dish of water so that the water does not spill, or any other similar tasks which call for the attention of the child. These exercises recall the wandering attention of the child to the personality.

What kind of stories should we tell the child during this first period? The stories that are most common in India are simple religious tales. We can also tell some stories which illustrate life—the little bird in the nest, and all that the mother does to help it, or some tale of work in the garden, calling the attention of the child to things in the garden. While telling stories we must keep in mind certain psychological characteristics of children. The child at this age has a peculiar ability to take into consideration all the people around him. He also desires to hear the same tales repeated. So the stories we tell must mention each member of the family — the father, the mother, the little child — and tell of what they did. This is the kind of story children like. In the tale of the Three Bears, one big, one middle-sized

and one small, the crux of the story always revolves around the same thing, so that the brain goes on turning around the same object.

In Italy, we make the children say their prayers before going to bed. We ask the child to pray to God asking him to keep his father alive, his mother alive, his sister and in the end himself. The adult stops after saying the name of the child, but the child, half asleep, continues with his uncle, his aunt, the cook, the cat and so on. The child has within him this need to think about each one of them. It is his soul in domesticity. Therefore, he finds tales which contain all these family names, domestic names, interesting.

The child at this age not only feels deep attachment to his mother, to his father, to his uncle, to his donkey, to everything around him, but also has a need to feel protected, to feel secure, his own person safeguarded. So in religion, what appeals to the child is the thought that God is always looking after him. The affective centre of the soul of the child likes the idea that he is the centre of interest of the high elements which form religion.

The teacher must aim to find tales which will please the child. This is a very difficult task. We believe that tales are very pleasing to the child. We do not realise that some stories may be too long for his mind. His mind is not ripe enough to understand their beauty. If we do have the luck to find a tale which pleases the child, we find it repetitive and a bit stupid. If we tell stories we must remember, that the child likes to feel that the small ones are always looked after by the bigger ones. The most tragic scenario that the child can imagine is being left alone, being abandoned or lost. In many fairy tales, the child, the main character loses his way. For the child, it is the most tragic happening.

However this pastime must not be repeated after the initial period. The real aim of the teacher is to call the at-

tention of the child. It is better that she should do this with the help of some other child.

One activity that meets with success is asking one child to call another child only by the description of his dress, or the colour of his eyes, and so on. The name of the cild is not mentioned. The child who is described has to recognise himself by the description, know that he is the one being called, and has to say his name. When we did this exercise, we were surprised that the child who was calling had noticed so many details — minute details of the dress, shades of colour and so forth, which we adults had not. The children being called, were also attentive and very conscious of their appearance. When the attention is centred in such a fashion, the right psychological moment has arrived to begin the exercises of practical life, mixed with collective games. The teacher should not let this favourable moment, when the child is ripe for something more serious, escape. This is the time to present some material in the environment which can be used with some aim. Luckily, the teacher is helped by the child, because the child has the desire to do small tasks, by himself.

In the first presentation of the material, the teacher must already know the technique of handling it. She must present the material as something of great importance. Before presenting any material, she must see that the table on which it is presented to the child is empty and scrupulously clean, just as we clean the house and put everything in order if some great visitor were coming.

If we want to present material to the child, it is the most natural thing to make him understand what we want to show him. So we must go to the child and ask his consent — " Here are many new things, would you like to take charge of them?" In other words, we have to arouse his interest. We must then present just one piece of material. In the Geometrical Insets, we present just one tray with the three

basic figures, among the Cylinder Blocks we present only one block.

During the presentation the teacher, begins to work with the object. In the case of the Cylinder Block, she takes them out of the sockets, mixes them up, and puts them back into place. If the child tries to interrupt, and continue the exercise himself, the lesson has been a success. If the child does not pay attention, does not show interest in what the teacher tries to show him, nothing is lost. The child, the material, and the teacher remain unharmed. The material is put back in place, and the episode is forgotten.

In our schools, if we gave a very young child an object too complicated for his mind, he would simply look at it, and go away if he did not understand it. He simply would not take in something too difficult for him. This is consoling. We do not want these objects used for a purpose for which they have not been made. In fact we do not let the child use the objects for a purpose which is not in accordance with the aim for which it was designed. The objects should be used in a way which has some relation to the development to be achieved by the child. Now, by this, we do not mean prejudicially, that the child should use the objects only in the way we think they should be used. However they should be used logically. For instance, if one of these Cylinders Blocks is tied with a rope and dragged behind the child who runs with it, it fulfils no aim, no purpose. The material may be used logically however, even though not in the classical way. For instance, a child may recognise the relation which exists between the Pink Tower and the Broad Stair, and put the largest cube of the Pink Tower next to the biggest prism of the Broad Stair, having recognised that they have the same cross section, width and length. This is marvellous indeed, because the child has used his capacity to examine and reason. This use of the Pink Tower is not conventional. However, this spontaneous discovery made

by the child would not be wrong because it helps him move along the lines of development. When the child uses the material for mental development, no matter how he uses it, it is right.

However we should always pesent the material in the usual prescribed fashion so that the special quality for which the material has been designed stands out. For instance, all the rods of the Long Stair, should be placed exactly aligned at one end, so that the difference of length stands out, because to understand the difference of length, the child must start from the same point. While comparing the height of two people, the difference does not appear if one person sits while the other stands. Instead, if both stood side by side, the difference in their height would stand out clearly. So a kind of a key with a special quality is usually given to the child. If the child took only two rods and looked at both of them together to study this difference of length, or if he made one long rod, placing all the rods end on end, not to make a train, but in order to fix his ideas of length, then the use is perfect. So in the presentation of material, we give great importance to this initiation. We show great respect for the material and are exact in its presentation. The initiation consists of placing the child in a positive relationship with this material, and in awakening his interest.

The importance of the material lies in the fact that through the activity, the mind of the child is called to that key which is presented by that material. This fact impresses the objects on the attention of the child. Once the attention of the child is fixed, once the material excites the child to movement, once the child is able to make the right use of this material, then the mind of the child takes from the material, all that it has to offer.

Music is something exact and beautiful. It is not just the rumbling noises we hear that brings forth any music,

but the feelings it arouses in the souls of people. A contact must be made between the music and us through the emotions and ideas aroused in our minds. When beautiful music is played, our hands begin to move, our heads begin to move, then even our feet begin to move. The music penetrates into our souls, establishing the contact. Along with movement which is our response to the music, we also feel an inner pleasure. Little by little, this pleasure makes us forget all other things, we forget the time, we forget our troubles, and just give ourselves up to music. We find a moment of concentration in something which is beautiful. In this moment of concentration, something moves in our souls, in our spirits. It is not only a physical contact which is made — the sound of music heard by our ears. It goes beyond that. Something occurs which gives an insight. We experience a sentiment which changes our souls. Our personalities become unified, due to an interest which develops something inside us. If we do not understand the music we hear, there is no harm done. We just go away and amuse ourselves with something else, and that is the end No contact is made.

This is the aim of each one of the excercises that we give to the child. When the child feels something, understands something, which arouses his interest, he starts moving. His movements are related to these objects, just as in music our interest is related to the music that we hear. This growing interest and this movement bring about a unity in his personality. Then we see the unique phenomenon — the child begins to repeat the exercises, with deep concentration. When he has finished the child seems different — he seems happier, more satisfied, serene and rested. Just as from music which has been understood, there comes an elevation of the spirit, gradually something develops from this exercise.

That is why we wish the child to fix his attention upon

these exercises. What after all is a musical instrument? It is nothing but an object of wood, strings and metal, by means of which sounds are extracted. What is a sound? It is only waves. So what that we hear, only affects our senses. The ear feels these waves. From this point begins, all the work which goes on inside man, because man is made this way. Something moves his spirit because he is made in such a way that he needs to concentrate his attention around something. Perhaps, this comparison is a little far fetched, but if the whole universe were a musical instrument, we take from it certain stimuli which cannot be caught by any other means except by our senses, and these cause in our spirits a constructive action.

We must consider these materials as sensorial stimuli. The Long Stair, the Colour Tablets, they are not musical instruments, but instruments prepared exactly and carefully, which cause our intelligence to move, giving us a part of something in the exterior world, which comes from the environment, enabling our minds to concentrate, giving us ideas. If our fingers give us the sensation of very small differences of surface, they give us a knowledge which moves our intelligence. The material acts on the child just as music has a spiritual action on us. The material is to the child's mental construction, what music is to our sentiment. The musical instrument is a sensorial instrument which addresses itself in a special way to the sentiment, to the soul. These materials are also sensorial instruments, and they address themselves to the organising of the intelligence.

To organise our intelligence, we require certain instruments and certain exercises. When these instruments are placed in a certain relation with our intelligence, we receive the help we need in the development of our mind. Just as in the field of music, we have to wait until we are capable of understanding music, in order to experience the spiritual upliftment which it can give, the teacher must

wait until the moment when the child feels this stimulus to the intelligence, when he will make the right action with the object.

CHAPTER 32

It is not easy to grade noises[1]. In the beginning, when the ear is not trained, the first step is to hear the difference between contrasts, and find two that are alike. A psychological factor also enters here with the identity and the contrasts. This material is difficult to prepare. We hear the very fine noise produced by the box with the small grains, and the heavier noise produced by pebbles and also the noises produced by the middle ones. To be really alike it is necessary that the material be carefully prepared, because if we put one more grain into one box than into the other, or one less pebble, the noises made by the material would not be alike.

After pairing there is the placing of one set of these boxes in gradation according to the intensity of the noise. The ear must be well developed to recognise these different noise. It is evident, that if we do not recognise the difference between the noises at first, but do recognise the difference later, there has been a development in the hearing power of the ear. Here also there is a technique to be followed. If the box held in the left hand produces a louder sound

1. In this lecture, Dr. Maria Montessori made a distinction between *noise* and *sound*. " ...they are not sounds, for us sounds are only musical sounds..." Montessorians no longer seem to make this distinction. Today this material is called Sound Boxes. They consist of six pairs of cylinders graded from loud to soft. The cylinders have to be shaken for the sounds.

than the one held in the right hand[1], there is a difference between the two. We set down both, the louder one to the left. If the next one seems to be even louder than the loud one we had before, we place it to the left of the previous one. We find the contrast, then something in between the contrast, then something between the first and the second, and then between the second and the third. So we proceed shaking each one and finding its exact place, finally checking if there is a gradation by shaking each box and listening.

It is certain that the technique and the material, help the individual to find these differences. If the technique is not offered to the child the teacher always has to interfere. Instead, if we offer the material and the method of using this material, we go forward in development and in education. This offering of a method together with the material, offers the child the means by which he can gain independence, because the method helps him teach himself. He does not have to depend upon the spiritual or intellectual administration of other people. There exists an inner independence which can only be acquired gradually by means of exercise.

After all, with the means of the correct material and a precise method, the child learns to discriminate, judging small differences that he had not been able to before, for himself. If we go on with this education, which gives the child gradual independence, his personality will acquire the capacity for clear judgement. In society this is most important. When we are able to judge for ourselves independently, we cannot fall victim to the enthusiastic words or fanatical reasoning of another person. This capacity for self-judgement can be achieved only by a methodical and gradual formation of the mind starting from earliest childhood. If we give the child well prepared material and a method which allows him to

2. Today we ensure that the child holds only one box at a time to ensure that he does not shake them both simultaneously.

develop by himself, he will arrive at the point of being able to judge between the very fine shades of differences which have been scientifically analysed and classified. This is true in every sense, in every field, in every exercise.

When the materials are formed into independent, separate groups, the child analyses the abstract qualities of things — dimension, form, and colour. There are three dimensions, three forms, and also three colours to be considered. So there is a distinction among the qualities, a further subdivison. In each of these subdivisions, there are gradations. Among the gradations, there are combinations, as we see in the geometrical figures. This mental work carried out gradually, is always accompanied by movement, by judgment and by reasoning. It is because of this that the child is left free to work without any oral explanations. The facts are grasped by the child's mind, without the need for explanations. It would be too much to say that the facts are grasped clearly. However they are absorbed in a live way, as a part of the child's own personality, his own mental life.

We are accustomed to saying that the capacity to distinguish between these differences, is inborn in men. It forms so much a part of man's nature, that we believe that it is passed down from generation to generation. So this taking in of ideas is not learning as we know it. It is something vital, an incarnation. The child absorbs ideas into his own personality as if by heredity. He seems to be capable of distinguishing between things as if he were born with this gift. The mind with this capacity to distinguish all qualities, abstracts one quality from all others. By this, order is brought about, and construction takes place in the mind of the individual, on the abstract plane. So the mind, and the individual are built up. If left to chance, or abandoned to nature, many empty spaces may be left in the mind, and a great deal of disorder may occur.

In our schools, the construction is directed, and every part is taken care of, so that the process of mental formation is aided and shortened. Therefore much importance is given to the material and its use. While collecting a bunch of flowers, there is no need to be exact. In our schools the method is the key to the environment; it is a means of development. We, therefore need to practice this precision, this exactness. If we do not the result is a lack of independence, or mental confusion. When the child becomes very interested in these exercises, they are repeated again and again. In the end, he incarnates these distinctions. This is a vital part of development.

It is psychologically necessary, to give the child the names of the objects. The word in itself is an abstraction, but it serves to fix the idea. If men did not possess language, they would not possess an organised mental body. So after this construction has taken place, we give the child a word for each quality. By giving the names, it is as if we take a hammer and a nail and we fix these names to the gradations. This giving of the names, we call the lesson. A clear word corresponding to the quality is given to the child, so that it remains psychologically fixed. This method of giving a word, was used for deficent children long ago[1]. The old way is still followed because the lesson, which is formative, was based upon human psychology which does not change.

We can see how these objects[2] differ. They are all alike in height, but they have different sections. Is there

1. In the original manuscript the year mentioned is 1848.

2. These cylinders form a part of a larger set of material today called Coloured Cylinders. The entire material consist of four sets of cylinders which correspond exactly in dimension to the cylinders found in the four Cylinder Blocks A, B, C, and C1, and are respectively painted in the colours blue, red, yellow and green. The Cylinders do not have knobs. The cylinders used here are the red ones which correspond in dimensions to the cylinders in Block B.

a word which serves to demonstrate this fact as a general fact? Certainly there is a word. In the language of man, there is a word to expres everything. Among the immense number of words in the language it is necessary to give the right word to the child.

When two objects have the same height, but have different cross sections, we say one is thick, and the other is thin. There maybe many variations but these are the basic words to express the idea. The teacher therefore, takes these objects which represent two extremities, and says in a very clear audible voice to the child — " This is thick, this is thin" The words are well emphasised. Psychologically speaking, we give the right word for this difference of qualities. This is the first part of the lesson.

Then comes the second part in which we see if the child recognises these differences when we give him the word which expresses this difference. To do this we invite the child by means of activity. How else can we gauge if he has understood or not? So the teacher says to him — " Give me the thick one! " The child gives it. Or the teacher says — " Give me the thin one! " The child gives it. We repeat this time and again, and by this repetition the word is impressed on the mind of the child. This is the important part of the lesson as far as the memorisation of the word is concerned. The lesson is amusing, and because the child has to give the thick or thin piece, this interest lasts for some time.

Once we know that these words have been impressed on the mind of the child, we must see whether the child is capable of pronouncing the word. Now, the teacher must be active, and ask the child — " Which is this? " The child says — " Thick ! " The teacher pretends to be a little deaf and asks the child to repeat the word again and again. If he does not pronounce it well, the teacher persists until the word is perfectly pronounced.

If we take another series[1], we see objects which are different in all dimensions, as the mother in relation to the child. First, we give the child the word. We do not give any explanation, because if we gave a long explanation using many other words, it would create confusion. We merely pronounce the word so that it will stick in the child's mind. So, the teacher says, "Big, small!" We see if he understands the word. The second part is the real lesson. We must make it as amusing as possible because the words have to be impressed on the mind of the child.

One word may be easy and another very difficult. There is abstraction in words, so the word not only gives the right term for the quality but also the relation between the objects. This is an excellent method for the teaching of a foreign language, because usually when we say foreign words, we do not say them the way they should be said. By repeating the words clearly and often, gradually we will be able to pronounce them correctly[2].

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1. The cylinders used here are the yellow ones which correspond in dimensions to the cylinders in Block C.

2. This lecture was followed by name lessons given by Mr. Mario Montessori in the usual three parts. The name lessons were given in Italian. The qualities named were — *grande* (big) and *piccolo* (small) *grosso* (thick) and *fino* (thin) *lungo* (long) and *corto* (short) *allo* (tall or high) and *basso* (short). Interestingly enough, this was followed by a name lesson in Gujarati, givien by an Indian student to Mr. Mario Montessori.

CHAPTER 33

After hearing about the exercises of practical life, and the sensorial exercises, we may think that besides all these there is something more to be given to the child, in terms of instruction, education and culture. I received a letter from one of our schools in Holland, in which there is a description of the things which a child of four years is doing there. This child knows the names of all the geometrical figures. He knows the whole of the alphabet, and how to read the names of objects. He knows a great many details of natural history, about plants, roots, flowers and leaves. He knows how to count up to one million. He can compose numbers as big as 1,352 spontaneously, without making any errors. He can recognise the different parts of the world. He knows the names of all the countries in Europe, and the flags which belong toe ach country. He knows the names of all the oceans, and of all the islands. He knows all the provinces of Holland!

The child takes in the items of instruction with ease. It is surprising how spontaneously he works!. Each child takes his own work, and carries it out with intense interest. When the time for leaving the school comes, he puts the materials away in a very natural, calm way and goes home quietly. This gives us some consolation. Every child will be able to do all these things once he is four years old. What this really means is that once the child becomes normalised, once the right methods are applied, culture is no problem

at all. It becomes very easy and arouses great enthusiasm in the child. It can be compared to a plant which grows gradually.

In order to arrive at such a point, patient and very careful preparation is necessary. This preparation forms the necessary basis upon which all the construction of culture arises later. The secret lies in the fact that our aim is not so much culture as the seconding of the psychic laws of natural growth. The spirit of man is not served by eating bread or rice. It is served by learning things, by partaking of culture. Instruction is, in this sense, as natural even as eating! The fine details on which we insist are necessary details. Care must be taken in order to help human development.

We must very clearly understand what the psychic life of the child is. What do we say when we present to the child a material which represents an abstraction? We try to fix this idea in his mind by means of a word which corresponds exactly to the idea. This corresponds to the needs of his psychic growth. It also corresponds to our mental form, because our mind is very big. It is not passive.

It is usually thought that we receive images through the senses, and that from these images the mind sluggishly starts to work. This growth of man's intelligence is compared to that of animals, which slowly developed higher intelligence arriving at last at the intelligence of a well developed mind. This implies that man's individuality, and his mental growth have developed from a very low level. This is not so.

We must consider man as a being who has received a a new energy, an energy which no other form of life has, which persists in him. This energy is the chief characteristic of man, that part which distinguishes man from the other forms of life. When man came upon the earth, he came as a new energy. The wireless apparatus, made of wood,

metal and glass, is a new machine[1], entirely different from machines made previously. It has a special characteristic, it can capture special waves, and reproduce faithfully all the sounds they carry. The power of abstraction belongs exclusively to man, and his abstract ideas further create ideas in his mind through which something new arises.

In studying the history of man, we see things which have always followed each other in the same order. This causes us to arrive at a mechanism for the development of the mind. Men, when they arrived at a certain level, observed and saw many things. From these things they formed many abstract ideas. They fixed these abstract ideas and gave them an inclusive name — wisdom. To possess this wisdom was for man almost a surprise. It made a deep impression upon him. To fix the abstract ideas by a form, he personified it as a deity — the Goddess of Wisdom. This means that man realised that this wisdom was not taken from the lower levels of the animal kingdom, but something which had arisen within him. This great impression, this great surprise, is the characteristic of man.

When man learned to make declicate, gentle and elegant expressions of music, which have no outer utility, it represented his aesthetical perfection. Man recognised that this was given to him by an inner force. He personified nature as a deity — perhaps the deity of movement. In certain places, in primitive times, man was touched by the grandeur of the sun. This was not because his skin became warm when the sun shone, nor due to the dazzling light of the sun,

1. Guglielmo Marconi, an Italian engineer sent out the first radio communication signals in 1895. From then on many people contributed to the development of the wireless. From 1920 to 1950 the radio played the same role in entertainment as television today, as millions of families gathered around their wireless sets every night to listen to their favourite programmes. This period, called the Golden Age of Broadcasting ended with the rise of television in the fifties.

but because something inside him stirred. So of this also he made a deity. So were all the conquests, all the discoveries made into deities.

Thus man does not feel that he has grown from below, but that these great things were given to him. When he becomes conscious by his powers he realises that they are great. The abstract ideas cause emotion and great understanding. He gives wisdom form by materialising it as a deity with human features. This not being sufficient, he goes back to the idea of personification and builds around it, using words, movements, and sentiments to make it perpetual. Thus man has the tendency to fix abstract ideas and to give them a form. If humanity must fix these great abstractions and materialise them in the spiritual, the abstract and also the natural world, how much more necessary it is for the form of that intelligence, which has been the field for all these discoveries and abstractions, to be fixed! How much more is due for the child who comes into the world as a great deposit of energy which has as yet no form, which must be elaborated! Therefore, the child needs these materials, and he needs ideas to be fixed by means of words.

This is the mechanism of the intelligence. If we follow history, we see that in all civilisations, in all religions, this mental mechanism is repeated. If an idea is to be fixed, it must become materialised. Words and actions must accompany it. It does not remain a vague idea, up in the heavens, without expression, without words. The idea takes form through words, and enters into the mind which answers it, through words and emotions. This requires action, it requires the repetition of the exercises, materialisation and order. We see this in the very psychic nature of man. Therefore, we do not go against the forming of abstract ideas by offering the child the materials and words. On the contrary, we help the forming of abstract ideas through this materialisation. This is followed by the possibility of

action, which helps the mental construction. These great concepts and ideas could not have been picked up in our hands. Yet they entered us somehow. It is true that the child has the power of abstraction, of building up concepts. However this process of building up can be rendered clearer and quicker.

Man uses thoughts. He makes thoughts and expresses them through words. He possesses many words. It is certain that man understands the meaning of words. However, a word is nothing but a movement of air produced by muscular movements. Yet, in itself, a word seems to have the immense power of stabilising ideas. It seems to have a spiritual strength, and is in itself very powerful. It is so natural that it arises with the idea. Man sees a new object and gives it a name. So the object is no longer a mere object, it is an object which has a word attached to it. So it is with all the things that men see. No matter what the object, they cannot see it without attaching a word to it. When man conceives of an abstraction of an idea, to it he attaches a word. So the word is something very powerful, whether it is attached to an object, or to a great mental concept. Once it is created, it has power to remain for a long time. It is certain that when a man makes a promise, he fixes this sacred feeling by means of a word so that it forms a part of the very form of psychic life itself. It is clear in itself. It does not need any explanation.

When man gives an object a name, it is a word which has an almost immortal power. The names outlive their utility, sometimes they even outlive the race which creates them. Historical events succeed each other. People and nations disappear, but the word lives. This is striking. There are many places in the United States of America, with names like Missouri, Mississippi and Alaska. These names neither belong to the language of the people who now inhabit the country, nor to the people who live in those

localities now. These names were given by the Native American.[1] Why is it that the people who occupied these places, who sent the original inhabitants away, respect the old names? This is something to ponder. In California, the names of many places recall the Catholic religion; San Francisco, Los Angeles — they are names of saints and angels. The people who live there today, are not Catholics, they are Protestants, yet they keep the old names. Even stranger is the fact that these people speak English while all these names are Spanish! So these Protestant English speaking people use Catholic names in Spanish! There is something stronger than man, stronger than the historical needs of man — the word. We can almost study the history of humanity by studying the names which have remained fixed to various things. We can also study the origin of a people by studying some relics of their old language. In language there is power. Man passes, but the word remains. It is a force that we must consider, as it reveals the superiority of the intelligence of mankind.

By means of the senses, images are made in the mind. After the images have been taken in, abstract construction takes place. These abstract constructions have the power of carving the aims of men. By means of a secret, inner beatitude, when these great abstract ideas are formed in the minds of man, a need is felt to arrest the idea and to fix it. The word, which is nothing but movement, fixes the idea. The word is part of a psychic whole, not merely a play between senses and movements. In this play there is inner life. Along with the word, there is a need of something tangible in the external world to aid in fixing the idea. In order to perpetuate this idea, and fix it, man must exercise himself around this tangible thing.

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1. The term used in original manuscript is *Red Indian*. It is changed here to the acceptable modern term.

It is enough if we understand that there is a material way, a method by which we can help this mental construction. It is a method which is not mere culture, or learning by heart, but a vital process which forms part of the mechanism of life.

CHAPTER 34

When a word is given to the child in relation with an object, a new period starts in education, a period in which culture is offered to him. In order to give this culture, preparations have to be made. There are two points to remember in this preparation. The idea, and the nature of the thing of which the name is given, must be very well known. Before the name is given the child should have already fortified his character. He should have learned to be constant in his work, to finish what he has begun, and to replace what he has taken. In order to be able to proceed with rapidity in the path of culture, this is essential preparation. In order to offer culture, we must prepare the person who listens. He must have the patience to listen, and the constancy to continue. Otherwise, we will lose a lot of time in trying to catch his wandering mind and to keep its attention.

We give certain words in relation with this knowledge that we have imparted. These words are clear and systematised. We have up to now said that we give names; we should have said words. We give accurate words which belong to the special quality. Instead of names (nouns), we give adjectives — thin, thick, rough, soft. These are words which belong to a determined quality, which can be applied to objects which have that quality. The child absorbs these words with great ease. When we offer the child a word which corresponds exactly to the quality, we

also give precision to his language. It is marvellous to see how the child takes this exactness into his mind and uses it to judge things around him.

Once two small children who were in a class, looked at the lines drawn on the blackboard. One child said to the other — "L ook, how small that line is!" The other child replied — "No, it is not small, it is long and thin !" The child had learned to judge.

Another child saw some workmen enter the room with a pane of glass and a ladder, to repair a broken window, and said that the pane was too short for the window. When the workmen attempted to replace the pane they found that it was indeed short by one centimetre!

Once, when a lady came to the class, a child next to her said — " What a beautiful ribbon you have. I have seen a flower which is absolutely of the same shade!" The flower was brought and placed near the ribbon. They were exactly the same shade! This wonderful memory, this wonderful judgment of the child forms by itself.

Thus, we see the potential of the concentrated mind. This helps us understand that this judgment of things will grow through observation. The ease, the delight with which the child absorbs the words depends upon the age of the child, (we call it the sensitive period) during which the child builds his patrimony of words. Only then do we see the child's pleasure or happiness in learning words. It is like trying to reach the ideal of dressing well with beautiful ornaments.

The child is very glad to learn new words, even strange words, which he does not hear everyday. So we can give the child a set of new scientific words in an orderly way that the child cannot get in the outside world. This is the task of the school. What must be remembered is that the child wishes to have these words, so the teacher must be brave and give him as many words as possible! This seems to be

contrary to common experience, because teachers often ask—"Why should we offer words like *globe* or *relief* to the child? What need has he for such words? He does not use them!" The child needs these words to build his intelligence. The moment the words are received, they are registered.

Then we give the child all the possible nouns. Among the geometrical figures, we give the names of the geometrical forms with which the child is already familiar through the use of the Geometrical Insets. Words like trapezium, pentagon, hexagon, nonagon are given to children between three and a half and four years of age. So also, the names of all the materials given to the child to understand sensorially, such as colours, fabrics (like silk, cotton, linen, wool, canvas, flax) are all given to young children.

During this period, we can give a great number of names but we must give them in an orderly and classified way. We can show the child a collection of objects used exclusively in the kitchen. We can show him another group of objects which represent dress, and the name of each item of clothing can be given. We can also show him the parts of the house. Thus these groups of objects are separated and all their names learned. We could give the names of plants, animals, different stones, or fish, We can also take examples of every visible representation of animal life, divide and classify them into different groups according to qualities and present them. We can choose groups of scientific systems, and terms used in biology. In such a case we could use pictures or figures which represent the classifications. We could thus present amphibians, insects, reptiles, birds, or mammals. We can distinguish, roots, flowers, leaves and seeds, or a series of trees. Instead of giving all these toggether, it is much easier to give them in groups. These groups are scientifically based, the subject having already been divided into such groups by scientists.

These materials must be given to the child. If we can

give them ideas in the sensorial age, abstract ideas of thickness, thinness, size and form, why can we not give these classified pictures which help the child to adopt these new worlds in the sensorial way? The objects themselves, are better than pictures. This is a mere indication of the vast quantity of logical yet simple materials, that have to be prepared by the teachers in our schools. We must remember that this classification is not confined to words and objects, there is also the action on the part of the children to be considered.

One day, in one of our schools, in which the children came from families accustomed to travel, we had in the class for the bigger children, a geographical globe. The children had understood that it represented the world. A child not yet four years old, who was present said — " Oh, is that the world? My uncle has done the tour of the world!" Evidently, he had in his mind, the word — *world*. He had known this marvellous word, but had not known what it stood for. He had heard that his uncle had toured all over the world, but he had not known what *world* meant. The globe helped him to realise something which was already in his mind. On the globe, the different countries were represented. One of the children said — " Here is America! " Another child exclaimed — " Oh, is that America? Then this is the sea, because there must be a sea in between !" Geographical knowledge of even very small children, is marvellous. Then another child who resided in Holland, asked — " Where is Holland on the globe? " When he was shown a small point he said — " Oh, is that Holland?" Another child asked — " Where is Switzerland? My brother has gone to study there! " Thus they wanted to know where each place they had heard about was. So all the children crowded round the globe avidly. Then, one child being Dutch, wanted to locate the Dutch Indies — Sumatra, Java. We must realise that the geographical

globe represented to these children a means by which they could order the ideas, which they had picked up from their parents' conversations, but could not visualise in their minds so far — the tour of America, the sea and so on.

Now we have begun to place the geographical globe in the class of children between the age of three and a half and four years. It is a special globe. There is no writing on it. We use just two colours, very brilliant and very distinct[1]. The land part is covered with silver paint on a red enamel, and the sea part with a very brilliant blue. The marvellous thing is the fact that such a small child had understood that when his uncle had made a tour of the world, he had not made a tour of the little ball that he held in his hands. The child had already formed in his mind the idea of this immense thing that took so many days to travel round. This material had given him the form of the world.

We give our children, who hear so much spoken of different countries at home, the geographical elements, that help them to acquire an orientation. When the child hears about a city, it is not the mere sounds of the word that registers, but the image created by the word in the mind of the child. However these images are confused. The material we give helps the child to put his ideas in order, just as the classification of the sensorial materials helps him to bring order to all the vague sensations that he has. This discovery of the child's need for images was a surprise. His need for material to represent this, was also a surprise.

When the children were walking on the line doing the exercise with flags made of pieces of coloured paper in their hands, one of the flags was the flag of one of the countries. The children asked for flags of different countries, which we

1. Today, this land and water globe is made in two distinct colours blue and brown. The blue represents water and brown, land. The land part is made of rough sand paper.

gave them. Many of these flags are sensorially striking and easily recognisable because they have symbols which are special to various countries. The arms in the Italian flag, the Swastika in the German, the sickle in the Russian, the funny rectangles in the English, and the various stars in the American — these special differences seen in the flags were attractive to the children[1]. So we made another globe[2] on which each nation was of a different colour, which had no other disinction except the border limits of these nations. The children were asked to pin each flag in the map of the country to which it belonged.

So we see how the mind of a small child receives help from culture. The child prepares himself for culture. The preparation offered to the child by nature, by the environment is confused. The task of cultural education is to put in order all the mass of confused impressions that the child has taken from the environment. The objects must always correspond to these ideas, because it would be very difficult to order these ideas theoretically, without an object. If we have the objects, the possibility of handling these objects, and the classifications of the groups, then this order is not only possible but also very pleasing. It is a real help. How many things can be put in order in the minds of the children! All the abstract ideas of the qualities can be distinguished, classified and grouped. Thus culture can be built up in the mind of the child. Taking in this culture which is alive, is not an effort, nor is it fatiguing for the child; it is a pleasure. It involves not only his contemplation, but also his activity.

This active participation of the child may start from the two great sensorial groups, colour and form. They are the

1. This lecture was delivered in 1939. Today the descriptions of some of these flags and even the names of the countries are out of date.

2. Today the second globe, called the globe of continents represents the continents in different colours. The activity of pinning the flags on the countries is done on a flat flag map.

two points from which we can depart. Some colours more often found in nature than others, are more used in the world. In our world, which are the predominant colours?

Certainly blue is very common, because the sky and the sea are blue. These colours are a little evanescent, because if we take a jug of water from the sea, the colour is no longer there. If the air was blue, we would also be blue every time we breathed, but the air has no colour. Colour is only an impression, and the impression of blue is the most widespread in the world.

Another colour which is widespread is that which covers the earth, green. This colour does not disappear like that of the blue of the sea or sky. We can pick leaves, and put them on the table before our eyes, the colour does not disappear. The green that covers the earth appears in so many different forms, in the green leaves. Some of the leaves are quite green, some of them are even bigger than the child. Some of them look like spread hands, and there are leaves of different sizes. The child observes if they feel smooth, or rough, whether they are hairy, or scented. These different forms and distinctions form centres of exploration for the mind of the child. The child is interested in the wooden material representing the fundamental forms of leaves which are scientifically determined. It is incredible how much interest the children show in a subject when they have learnt to observe. Once during a visit to one of our schools, I told the teacher that a small child had gone out. I was worried that he might wander into the road and be run over. The teacher said that he had gone out into the garden to look for a special kind of leaf. He had been out in the garden in search of it the previous day but he had not found it, so he had gone again.

Green is the colour of the earth. However, we see another colour, when the earth is not covered by green. The brown colour of the earth is the result of many factors,

such as the plants that mix with the earth, the rock, the dust and so forth. Only when we go to the beach do we find the primitive colour of the earth — something between brown and yellow.

To have a vision of the whole, we can take a piece of paper, a brush, some colours, and make on this paper a strip of light blue on top representing the sky. Below it we can make another wide strip of deep blue, representing the sea. Below that we can paint a little thin strip of yellow representing the sand, and then a strip of light green. We can put at a distinctive point a little drawing representing a boat on the deep blue of the sea. We can also put a palm where the green colour is. Then our picture is complete. With great simplicity, merely by making use of some ordinary materials, we have formed a picture.

This is the beginning of production, of self-expression, of work. To do this the child needs something else which is very important, which cannot be given as the material is given. He needs the objects necessary to carry out all this work. This of course depends upon the technique of production. Of the necessary objects, which are the brushes most suited to make paintings of this kind? What kind of colours are easy to use? We must seek in the environment the best colours, which will correspond to the needs of the child and help him achieve facility of expression. We must also give the child the exact technique (for instance, how to clean the brushes) and allow him to learn through practice and exercise. Only if he has the suitable materials, can he produce something satisfactory. Little by little, things may develop from this. If he puts the moon in the sky, he will realise that many of the colours will change. The green of the earth will become black. Instead, if he has the sun, all the colours will become brilliant. When the sun is shining many details can be put in — little houses, some animals, many boats in the blue sea, with coloured sails. Roads can

be put in on the parts that represent the earth. Gradually the painting grows. While painting he also learns a little bit of the technique — how to use colours, how to handle brushes. He can then draw whatever comes into his mind, on a piece of paper. Perhaps they are only houses, perhaps only an animal or a leaf, an idea taken from his imagination. He has a brush, and some colours, and his own hand. Thus, a new path to self-expression lies open.

CHAPTER 35

It is surprising that even the very small child is able to learn so many different things. The mind of the child seems like a magnet which attracts the things that surrounds him. The child, like a bird, gathers up everything that he finds around and deposits it in his nest. This is his true nature. The small child, takes in the images of the things which he sees. The older child, takes in the knowledge of the things, not merely their images. He wants to know, and is ready to know many things. How much should we offer the small child? Any material can be offered to him keeping in mind the prepared environment in which we leave him free to take what he needs. We merely observe what the child takes in, and what part of the knowledge he rejects, we leave alone. If among the things we give the child, there is something which is too difficult, he simply does not take it in and there is no harm done. However, often we see the child go even beyond what we are trying to give him. We have seen this in many countries.

In our schools, the children are in close communication with each other. There are no walls. Very often, the young child goes into the class of the older child, so he goes even beyond the limits that we put on him. He goes around seeking knowledge, saying — "I want to know more!" And whatever is within the reach of his intelligence, he takes. He also tries to do whatever he can. The child in his first

year looks around him and has the power of recognising everything that he sees. Between three and five years, when he goes around seeking knowledge, he takes in what he finds or accepts what he is told and is very happy. There is no limit to the facts, the knowledge that he takes in. He has within him the power of grasping knowledge and keeping it. However not yet developed, is that part of the human mind, which questions an occurence, which takes a critical view of what it learns. Later the child becomes interested in the reason behind things. This difference is seen most clearly in the reactions of different children to the same fact.

As far as possible, it is good to bring children into contact with the reality of life in animal form. In order to introduce the older children to the field of biology we decided to have an acquarium in the environment. Starting an acquarium involves more than taking a tub of water and putting a couple of live fish in it. In order to keep an aquarium, it is necessary, to understand the conditions in which the fish lived, and to prepare an environment for them. Water alone is not sufficient. The aquarium must contain a certain number of plants and a certain number of aquatic insects. These must be kept in a very exact proportion. The aquarium must be covered so that dust and poisonous things do not get into the water. A little bit of space must be left as a passage of air for the plants, so that the fish do not use up all the air absorbed in the water. The teacher was not very interested in the new experiment, but the children were very interested. The older children worked at something else, but the small children came to watch paying a great deal of attention.

Early one day, the small children saw that all the fish were dead. They were all deeply impressed by this fact. Every time they saw a new person, they ran up and said — "Do you know, the fish are dead?" This was their reaction whoever came, a known visitor or an unknown person.

They said the same thing with interest and feeling many times. The young children — we do not know for sure how much they understood — certainly understood that certain conditions were required for the fish in the aquarium to live well. The older children, who were seven years old looked at the dead fish and asked — "Why did these fish die?"

Thus we see the difference in psychology between the two! The small child accepts facts as they are. He accepts knowledge, and takes it in. He is enthusiastic about the dead fish, then he becomes agitated because the fish had died. The fact aroused in him emotion and activity, but he took it simply, as a fact, and repeated it. Instead, the older children pondered over the reason for the death of the fish. They asked — " Why did these fish die when their environment had been so well prepared?" Here the mind seeks the reasons behind the event.

The child between three and six years of age has a special psychological characteristic — the absorbent mind. He is preparing the mind to adapt so he takes in everything which is presented to him without criticism, unlike the older child who has begun to reason, and to seek into the reason of things. This child builds up the mind, because all the ideas that are around him are incarnated in his mind. We can give him anything, he will accept it. When he was small, he was sensitive to the sounds of language. He took them in and produced these sounds thus incarnating his mother tongue. So if an Italian mother, told the child that he is surrounded by angels and that he has an angel to protect him, this idea is incarnated in the child's psychology.

All these different phases of the psychology of the child are extremely interesting from the point of view of the child in his task as the builder, the constructor of man. In each period, he takes in something. He does not take in every-

thing in a mass, but with a certain power, through the different periods of development. He always constructs new things with what he takes in.

During this early period, something of the environment takes deep root in the mind of man. This becomes a characteristic part of him, a characteristic rooted in the depth of his soul. The traits and beliefs of his race, all the things taken from the environment, taken from the people around him, are built up during this period. These things draw out his enthusiasm, and penetrate into his mind, his soul.

The seven-year-old child has a completely different task. He no longer has the power of intense receptivity the small child has. His mentality is different. On receiving impressions he looks for the cause behind them. He sets the problems before his own mind. There are certain special things, which interest him which do not interest the small child.

A father says to his small child — "You are bad !" The child believes his father, and is pained by the fact that he is bad. However, by itself the fact awakens no problem in the child's mind. I remember a small child, whose father in a moment of ill-humour, had accused him of being naughty. It was an unjust accusation, there was no cause for it at all, but the child accepted the fact. She started to cry, threw herself into his arms and asked him to forgive her. Yet she had done nothing. The small child accepts facts as they are. Then the father consoled her saying — "You are mad to cry!" The child took this in too, and believed it to be a fact. This is the type of mentality at this period.

The seven-year-old child begins to ask himself what is good and what is bad. His mind begins to set itself problems. Many people have recognised that in the psychic field. From the point of view of learning, different types of mentality are seen in the different periods of a child's

life. Many have noticed that a child of five years begins to show certain changes in his mentality, and that at the age of seven, he is mature enough to receive certain other kinds of knowledge. All these different stages of the child's mentality must be studied. The differences in each stage are complex. There is not only a difference in the capacity of the child to absorb things, but also a distinct difference in the way he shows affection towards other people. There is a difference in his social beheaviour, the way he lives with his small companions. There is a difference in the child's needs with regard to the extent of the environment in which he lives. So a picture of a complex life which changes with each successive period, emerges.

Our method should correspond to these different stages of the child's life, finding a different environment, and different way of dealing with him in each stage. For example, a small child is very happy in a closed environment, like his own house. To him, it is not a confinement, to be relegated to live his life within this small limit. However for a child of seven years these limits are too narrow, he will try to get out, to run away, as he wants to augment the number of people who are in real relation with him. Education must therefore, correspond to these changes. A plan of education must be constituted for each stage.

We distinguish four different phases in a child's life. These different phases in psychic life correspond also to what might be termed real transformations in physical life. The child we are accustomed to seeing daily, does not change before our eyes. Yet if he is watched at different periods, he undergoes transformations which are quite visible.

The transformations of life which occur in the first two years, do not form part of school life. In this phase, the child shows his readiness for independence, he begins to walk by himself, he knows how to talk, he has his teeth. He is a soft little baby who has a rounded from, who grasps

his mother's hand or skirt in affection. We can hardly resist the temptation of caressing him. He has a tendency always to be close to the side of the person he likes. His sweet little mind, so innocent, believes everything, repeats everything with great faith, he is like the perfect spiritual man who believes all that he is told. So much so, that when somebody tells him that he is bad, he believes it. With his soft, curly hair, small pearly teeth, each one so tiny yet so complete, his fat little hands with dimples in them and rounded face, he is so sweet.

Then the time comes when one of those little teeth begins to shake. Other changes also appear. We must take a great many photos of this sweet little child before this moment, and say — " Goodbye, my little child! Goodbye! " The sweet little child who had all these characteristics disappears. We can show these pictures, to a person who comes to visit saying — " You see this beautiful little child, he is no more! " The visitor may ask — " Is he dead?" We can only reply — " No, now, he is a big boy! " The child is now completely a different being. His rounded little face looks older, his teeth fall out one after another, and then teeth of enormous size grow out in the place of the tiny ones, teeth which are absolutely out of proportion to the size of the head, so that he looks more like a horse than a child. From a plump little thing, he becomes thinner, his hair becomes thick, coarse and straight, and the curls disappear. Then his feet become very big, and his legs become very long. Psychologically too, he changes. He is no longer a quiet little thing. He becomes rough and answers questions in a rough manner. He wants to go out all the time. His mother, his house and even his school do not seem to satisfy him. It is as though nature has given him long legs to go out into the world. He begins to want to know the why, the wherefore, and the what of everything. His parents usually either do not know how to answer these

questions, or they do not want to answer them. Thus an entirely different type of child emerges. The child has become a boy.

This epoch, is the primary school stage. This psychological change does not take place suddenly. The child's teeth do not all fall out on the same day, they fall out one by one over a period of time. The change is so gradual that the parents do not realise the differences in the child. If we leave the child for two years and then come back, we will notice all the changes in him. At the age of seven the child has a powerful mind. He is no longer passive. He still receives impressions, but he becomes an investigator. He does not want to be attached to anybody. While before, he was very glad when his mother put a new set of clothes on him, now he does not want to wear something new, he does not like to be dressed up. He wants to grow into a strong man. Before, he wanted his nurse to accompany him to school, now he is ashamed of being accompanied by her. Before, his social relations were limited to his family, he only knew his brothers, sisters, parents and uncles. Now Now he has in him the spirit of adventure. He wants to see more of the world. This explains the great success that the Boy Scouts[1] movement has had. It has given a new dignity, a new responsibility to these children between six and eleven years of age.

At this age it is possible for the child to take in an enormous amount of culture. All the studies which need exactness can be begun at this age. The child finds that he can use his mind on mathematical problems, and the exact and precise study of languages. The child's own mental

1. The Boy Scout movement was started by an English army officer Sir Baden Powell in 1908. Emphasising outdoor activities, duty and good character it became popular all over the world. In 1916, Dr. Annie Besant started a Boy Scouts Association in India.

indiviuality is formed. We have found by experience, that during this period the syllabus must be enlarged, containing not only things taught in the primary period, but many things taught in the succeeding secondary school period.

The life of man during the period of development, is divided into very clear phases. Today these metamorphoses of life, have been recognised in all their importance, in all their depth and in all the effectiveness of their extension.

CHAPTER 36

Why is it necessary to give these exercises so early in the child's life? Would it not be better to offer them later on, when the child's intelligence is more developed? When a child is hungry do we say — " Let us give food to a child who is more intelligent, because an intelligent child will appreciate the food! " No, we would not say so, because it is a question of hunger. The sensitive periods have nothing to do with the intelligence. They are the result of an inner urge which is within man in order that he may acquire certain qualities at certain periods, acquired independently of all other things. When we give to an older child, the work of a younger child, we ask him to perform a most difficult task. There is nothing more difficult than to go back on a sensitive period. It seems logical, that certain facets of mathematics should be more easily understood by a child of ten years, but many things which a child of ten cannot understand, arouse joy and enthusiasm in a child of six. So these sensitive periods are of enormous importance for the construction of the human intelligence. The human mind does not have to be a certain age before it can learn certain things, but must follow the laws of God. Why is food eaten only at certain times? When we are hungry, food excites pleasure. After we have eaten well (a great deal), we do not want any more food. If we are forced to eat, we may even feel nausea! In the same way

when exercises correspond to the child's sensitive periods, and his psychological state, he finds them absolutely pleasant. He hates the exercises when they do not coincide with his needs.

There is another part of our method which has not been clearly understood. It is important to offer the child material made to exact specifications. Why should a triangle be exactly ten centimetres and not nine or eight centimetres instead? Why should an object not be dark or light yellow, rather than that precise pure yellow colour? It is because, the child through the exactness of the material forms inside himself an inner touchstone of comparison. In order to build such a system, he has to have a unit of measure, something exact by which he can measure the other things. This touchstone, must be given to the child, because he cannot judge measurement, if he uses a foot at one time, and a yard or a metre, at another. Instead if he takes a foot as the unit he can say in comparison that this table is three times as long as that.

We can compare this sure means we offer the child to judge measurement to a special kind of key with certain ridges, certain curves which exactly fits the keyhole, and opens a special door. Without this special key, the door will not open. It is the same with the sensorial keys. They must be exact in order that the child can explore that part of the environment which these keys open.

To calculate body temperature a mark is made on a receptacle containing mercury to note its level. The receptacle is then placed in freezing water. The water is then brought to a boil. The mercury rises to a certain point. The space between the freezing point and the boiling point is divided into degrees.

Unlike cold-blooded animals whose temperatures vary according to whether they are in the sun or in the cold, through a simple mechanism our body temperature always remains

the same, 36½ degrees centigrade. If our body is not attacked by disease, our temperature remains always constant, no matter whether we are in icy conditions or in tropical places.

We must make it clear to the child sensorially, that temperature is a convention. What is cold and what is warm? It is we who have tested it according to our own judgment because there is no absolute cold, or absolute heat. They are only relative. We compare the temperatures of things with ourselves, because our temperature remains constant. When we touch something which is the same temperature as us we have no sense of temperature, so sensorially the zero from which we start is 36½ degrees centigrade.

The material for thermic impressions consists of a little box containing little bottles of tin or aluminium. These bottles each have a stopper attached, and are filled with water of different temperatures. Here too the presentation offers a means of pairing and contrasting. One member of each pair of bottles is found in a different colour, just to distinguish the sets. The temperature of the water varies from 10 degrees to 60 degrees. Above that the water will be too hot for the child to handle. The difficulty, of course, with this activity is to keep the water at a constant temperature. Every time we bring a bottle out to be touched, the cold bottles little by little, become as warm as the environment, and the warmer bottles lose their heat to the environment and become as warm as the environment itself. Finally all the bottles, are the same temperature. So we must take precautions. The box must be lined with cotton, and each bottle individually covered, as cotton contains a great deal of air. Of course, this exercise can be done only once because when the child takes the bottles in his hands, the heat tends to be equalised. The bottom of the bottles, are marked with spots in gradation of a single colour, the coldest pair with the darkest spots. These spots form the

control of error for the gradation of temperature.

The activity is simple. These bottles are all mixed up. The child feels any two of them to check if they are of the same temperature. If they are not of the same temperature, he takes the third and feels it. When he finds one like the first one, he places them as a pair together, side by side. Finally the child checks the gradation of temperature with the corresponding gradation of colour.

If the child tries to find the pairs by looking at the spots instead of feeling the bottles, it is because he does not find the exercise interesting. So we first have to arouse his interest, or the exercise is of no use. He neither gets a prize nor a scolding for performing this exercise. We must remember that the child, who is given this exercise, is already normalised. As long as the child is not deviated we can give him any exercise, he will not play a trick!.

The sensorial age is at its highest pitch between three and four years, but it goes up to six years (the age varies according to the child) diminishing in intensity. This exercise can be given even at three and a half years of age if the child is normalised. A deviation from normality is caused by some action which is extraneous and inimical to normality. We do not have these kinds of deviations in a natural environment.

In Europe many ladies have distorted toes. The toes become distorted by the use of tight shoes. Nature gives warning through pain. When there is pain, they know that something is wrong. However the urge to be beautiful is so great that the pain is disregarded. Then something strange happens. After a while they no longer feel the pain, but the toes become distorted. Instead of being straight, they are at an angle.

In order to bring a deviated child back to normality, we have to start doing something which will again give him pain. The march back to normality makes the child very

unhappy and causes him much fatigue. It is important to remember that we can correct a deviation, only during the sensitive period, afterwards it becomes permanent.

We have an example in what is called the Chinese foot. The women in China wear shoes which are so tiny that their feet get distorted. Some American doctors offered to restore normal development, specially treating the feet of Chinese girls under the age of six, with hot water and massage. The treatment was very painful. The deviated foot, gradually acquired the normal position, and the toes which were made straight, began to develop naturally. However after the girls reached a certain age, the treatment was no longer possible, because they were no longer in the period of development.

It is the same with many of the defects that we acquire during the period of early childhood, as a defense against the treatment that we receive from either the circumstances found in our environment or because of being misunderstood by those around us. We acquire these defects as a set character, with which we cannot do anything. As sufferers we understand that we are wrong, but even if we have the strength and will, when once the habit is formed, we cannot correct it. It forms part of our moral construction just as the little Chinese feet form part of the physical body.

Education is a tremendous responsibility during this period. Later on the errors that we make are of less importance, because they cannot do much harm. The young child however, is like soft wax. If we put anything on top of it when it is soft, it leaves an impression which cannot be cancelled, which remains even after the object is removed.

After the child has worked with the material for thermic impressions, a new world opens for him. He begins to explore the objects around him from the point of view of temperature. Each body has a degree of temperature of its own, the body is colder or warmer according to its constitu-

tion. This warmth or coldness has to do with the amount of air around the object, and the amount of space beween the molecules. Materials that are heavy (dense) are colder to the touch, and things that are light (less dense) are warmer. Also materials that shine are warmer than dull things.

Now we can offer the child objects of different compositions to feel — a piece of cork, a thick piece of felt (about the same thickness as the cork), a piece of light wood, a piece of iron. We must try to offer the child as many differences as possible, so we can also offer pieces of marble, terracotta, glass and stone. These pieces can be placed in gradation.

After the child has acquired these keys for exploration of the environment, the child can never remain static. He grows not only physically but also mentally. His growth is not unilateral, he grows in every direction. There are certain rules, a certain timetable set by God, which the child has to follow. We must allow him to follow this timetable with benevolence. He cannot stop growing even if we torture him. He may become a liar, he may grow distorted, but yet he will continue to grow. Only death can stop any further growth on his part! When a power has been achieved, he continues repeating the exercises until a certain point of maturity is reached. He then gives it up and goes to something else. Such is the mechanism of his growth.

When we have a capacity, we believe that the child must have that capacity too. We acquire these capacities as children, but we forget all that it takes to acquire them. We do not feel the change. The sensitive period is something of which we are not conscious, as we are conscious of hunger. Hunger is localised. It lasts a few minutes and then it is satisfied. The sensitive period lasts for a long time. The changes are so gradual, that we do not remember acquiring capacities. These sensitive periods are not felt by the adult

because he has reached maturity. Therefore, the adult cannot understand the child's actions, and the urges which excite his sensitivity. The adult can understand the child who is hungry, because the adult also feels hungry.

On a cultural level also, the adult feels that his child must be able to do all that he knows how to do! If the child could reproduce the action of the adult, there would be no difficulty at all. When we see a panorama, why are we not able to reproduce it? The power to paint a picture requires a preparation. Even when we see a reproduction and try to copy it, we cannot. Although our eyes take in the impression generally, our hands lack the preparation to paint what our eyes see.

Our approach provides a simple remedy. Every complex action is analysed into its formative elements. Each element is detached and isolated. An exercise is formed around each element and attached to the corresponding sensitive period. Thus each item becomes a motive of pleasure for the child, a stone by which he can build up the edifice of his intelligence, under the guidance of the urge to grow.

CHAPTER 37

In many places where the Montessori method is not known the child has to learn to write like everybody else. In one such village, the teacher had only one pen, an apposite instrument, with a little circular cut at each end. There was only one such pen, and about thirty or forty children. The child had to hold the pen with the two little fingers inside it and write. So the teacher could not watch if all the children held the pen in the position taught. Each child grabbed the pen in his own way, and in a fashion which made the movement easier. The teacher had to use persuasive methods. In the beginning she tied the child's fingers to the pen. After some days the pen nib was crushed, as the child tilted it in different directions and used a heavy hand. When the child learnt to hold the pen well, the fingers were left free, untied. When the child wrote, his fingers were not as they had been when they were tied to the pen. When the teacher who silently came from behind, saw the bent fingers she tried to set them right by rapping the knuckles. As soon as the child understood that he had done something wrong, he tried to set it right[1]. This was the way writing was taught! No one liked the writing lessons. No wonder we say — "The path to knowledge is strewn with tears."

In order to teach the child how to write, the teacher

1. The child described in this incident is Dr. Mario Montessori himself.

makes him draw little straight or slanting, parallel lines and hooks. If we try to draw a lot of parallel lines we immediately understand how difficult it is to achieve. Teachers expect that the child should be able to hold the pen and right away perform to perfection the most difficult calligraphic feat!

Culture, which is food for the intelligence, should be an aid to growth. The child between five and six years of age has a highly developed intelligence. Just imagine the child's intelligence being tied down to these boring unimportant little strokes which do not interest him in the least, to merely acquire mastery of a mechanism which he may use later on — for instance, when the teacher tells him to write about a walk in the garden. By the time the mechanism is ready, the intelligence is tired.

In our system different exercises are given at different ages. Each exercise is an instrument for the intelligence. That is why in our schools the child makes enormous progress. They are prepared, they have studied every little detail. The exercises are given in such a way that they seem to correspond to the need of the moment. When the child is in the sensorial age, he is in need of a certain organisation of exercises. He is building up something which will prove to be a treasure when the right time comes.

When the child learns to write he faces many difficulties. One such difficulty is the grasping of the pencil correctly. To grasp the pencil, we see the importance of exercise for the first, second and third fingers. The child is still in the stage in which co-ordination is acquired. The child derives great pleasure from moving round the contour of the geometrical form. It is almost as if he likes caressing the geometrical figures. Although the child can move his hand round the closed outline fixed on a piece of paper, he cannot yet trace definite figures. Therefore, through these exercises the child's hands more or less acquire that control in which it is possible to trace the contour of a fixed space

even with a finger, a control vital to writing.

The material for this exercise, consists of metal frames containing geometrical figures of different colours[1]. The figures have a relation of common measurement. Different coloured squares of paper, in as many colours as possible are put at the disposal of the child who can choose the one he wants. Each square paper is exactly the same size as the frame which contains the metal insets. The five metal insets rest on a stand, from which the child can choose one and bring it to the table along with a collection of coloured pencils. These pencils are in as many colours as possible, and represent the whole gradation of each colour blue, yellow and red. We usually offer the Ostwald colours if it is possible to have them, but the gradation is important. The pencils are neatly arranged in a special stand. The child who is already acquainted with colours, chooses those that he wants to represent in the colouring of the shape.

People say that these pencils are very expensive. Is it not strange that we find things expensive only when buying interesting things for children? I once met a father, a political economist, and the Under Secretary to the Minister for Economy in Italy. He said — " I will not buy these coloured pencils for my children. They are too costly, too expensive. They would consume a box a month. It is a waste!" I did not argue with the gentleman. I appeared to be persuaded by his argument. When I saw him again the following week, I asked him — " How many automobiles do you have? He said — " I have one for myself, my wife has one for her use and we have a big one for going out on drives." Besides this, he had a special room set apart for

1. The metal insets (also called drawing insets) are ten in number. The frames are pink and the insets blue. All the figures are based on ten centimetres. The ten figures represented are the triangle, the square, the circle, the pentagon, the flower, the ellipse, the oval, the trapezium the rectangle and the curvilinear triangle.

his exclusive use in the house, he had another house in the country where he could go and rest, due to all the hard work he was doing. I asked him — " Do you not consider these things expensive? " He said — " Oh no! I consider them absolutely necessary! " I asked him — " You find a box of pencils expensive, when you have five expensive typewriters you consider necessary. They are after all quite unnecessary! " He was struck by the example. He considered it and said — " Yes, we have a tendency to economise only where the child is concerned."

It is true all over the world, that when there is need to economise, the expenditure on education, is the first thing to be cut down. If you try to cut down the salaries of people, they protest and cry out. The voice of the child is ignored. If he tries to lift his voice and ask for anything, he is immediately silenced. Who listens to the voice of the poor child?

We reason that for a child who has experienced the muscular sensation of the geometrical form, the exercise is easy. After all we find it easy. We know how to hold a pencil, and how to go round a closed contour. This reasoning is wrong. We know how to walk, but if we attach stilts to our feet, can we walk? Similarly if we try to follow a contour with a writing instrument attached to our finger, it is difficult. The child has to acquire the ability to do so. He needs a certain amount of exercise in order to acquire the elasticity of the hand.

As always we offer the child some points of interest. In the first presentation we offer him only three coloured pencils, each of them a different contrasting colour, perhaps we can take out the three usual colours — red, blue and yellow. These three pencils are placed in a box. With these materials, a writing board, (either a cardboard or a blackboard) is also on the table.

The first figure offered to the child is the circle[1], because the circle has no angles, the hand does not experience any difficulty in going round the frame. At corners, the hand requires a greater control of movement. If the child makes big strokes it is very easy to go outside the inset. The frame is first placed on the paper which rests on the writing board. By pushing the point of the pencil against the side of the frame a line is drawn. When the frame is taken away we see on the paper the outline of the circle.

The inset is then placed on the outline seen on the paper and another line is drawn using another coloured pencil. It is necessary to put the inset on the paper in such a way that the first outline disappears. When we draw around the frame, we draw a circle which is smaller than the frame. When we draw around the inset, the circle drawn is larger than the inset. The circles should be concentric, the two circumferences parallel. This requires tremendous attention on the part of the child upon the sides of the figures. He must hold the pencil at the same angle throughout the exercise. If he holds it slanted the lines that result on the paper, will not be parallel to each other. The third stage of the exercise is to fill in the inside of the figure by using the third coloured pencil.

Having three coloured pencils for this exercise is a psychological ritual which gives an added interest to the exercise itself. If we give the child many pencils and ask him to take anything, the child does not know what to do. So in the beginning we offer just three colours and tell the child exactly how to use them, one to draw around the inset, one to draw around the frame and the third to fill in the shape. After all, freedom can only be exercised when we have acquired the capacity to be free. Freedom has its

1. Today the first figure to be offered is the ellipse. It offers no angles. The area to be filled in is narrower, when placed with the longer axis horizontal, thus making the exercise easier for a beginner.

limits. If we get lost in the desert, we are free to go wherever we like. However, if there was a little narrow path to follow in the desert, this limit would lead us to act, so as to arrive at some definite place. Such limits are necessary. The path in the desert is a guide. It helps us to choose, whether to go south or north. Thus in the beginning we offer the child some help.

In filling in the outline of the inset using the third pencil too, the child is offered a technique, and certain limits. He is told to make light strokes, as light as possible, and not to go out of the limits of the inner circle, until the control of lightness is acquired. The idea is to give the child the capacity of holding the pencil and acquiring an elasticity in holding the pencil, so that he need not have to make horizontal parallel lines at first. Initially, the child makes heavy enormous lines, but after a week or two he acquires the light touch. He is also told that while filling in the outline with parallel lines he must start at one extremity and go to the other. In the beginning, the child finds it a bit difficult. We can only teach the child the exact technique, we must not force him to follow it. Gradually he acquires lightness of touch, and gradually the pencil mark is hardly visible. Each line is fine like that of a light pen line.

The child loves to do this exercise. He wants to do it the whole day. At first we give him only one figure. Later all the figures are left at his disposal. The child begins to make such harmonious combinations, that psychologists call it art. This special decorative art, a preparation for writing, has been termed by many as Montessori drawing. It has the appearance of drawing, but is limited to the geometrical figures. With the harmonious combinations of figures, the space to be filled becomes smaller, and the child's hands become accustomed to filling in little spaces, to make big strokes, and to fill in the large spaces by going around the lines closely.

Thus we see the child make little hooks easily, those which he found difficult to make in the school copy books. We also see how easily he holds the writing instrument, and what mastery he has achieved in lightness of touch, so that the pencil colour is as light as that of a pen! When such a hand comes to the work of writing it can follow the will of the individual. When the child knows the letters, everything becomes easy. He holds the pencil to perfection, and writes. This writing ability is the result of separate and careful preparation through this exercise which we call drawing with insets.

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